AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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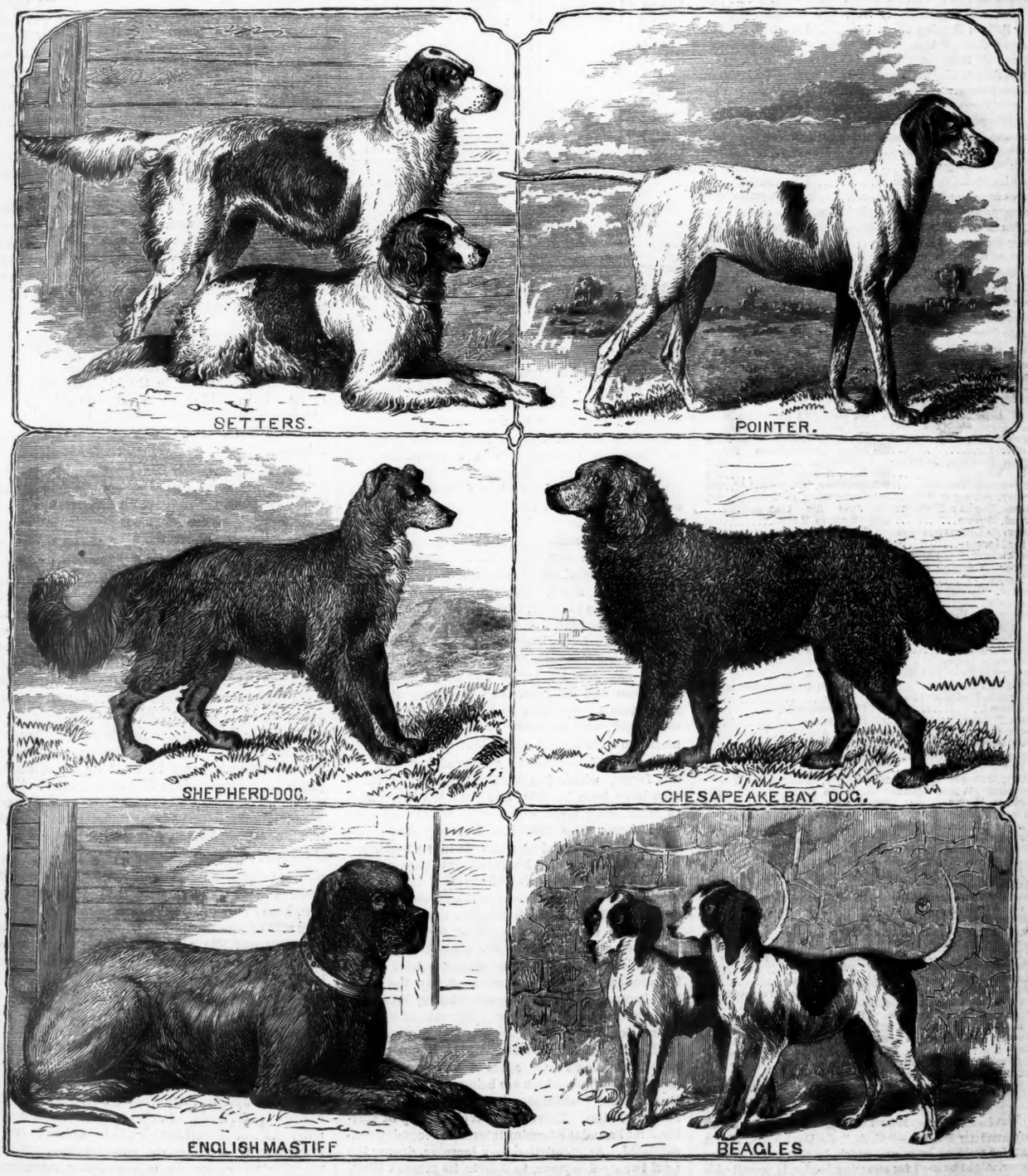

PRIZE DOGS AT THE NEW YORK BENCH SHOW.—*Drawn and Engraved for the American Agriculturist.*

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Vats for Scalding Hogs and Steaming Food.—"H. A.," Jo Davies Co., Ill. A vat for scalding hogs, and which, by the use of a close cover, might be used for steaming fodder, is described in the *American Agriculturist* of Dec., 1875. (Price 15 cts.)

Calendar for June.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.* Sun rises.	Sun sets.	Moon rises.	*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.* Sun rises.	Sun sets.	Moon rises.	*Washington, Maryland, Virginia, Kentucky, Missouri, and California.* Sun rises.	Sun sets.	Moon rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	F	4 25	7 30	11 48	4 30	7 25	11 46	4 36	7 19	11 42
2	S	4 25	7 31	morn	4 30	7 25	morn	4 36	7 20	morn
3	S	4 25	7 31	0 11	4 30	7 26	0 10	4 35	7 20	0 6
4	M	4 24	7 32	0 30	4 29	7 27	0 29	4 35	7 21	0 28
5	T	4 24	7 33	0 48	4 29	7 27	0 48	4 35	7 22	0 48
6	W	4 23	7 34	1 6	4 29	7 28	1 7	4 34	7 23	1 9
7	T	4 23	7 34	1 27	4 28	7 29	1 30	4 34	7 23	1 32
8	F	4 23	7 35	1 51	4 28	7 29	1 55	4 34	7 24	1 59
9	S	4 22	7 35	2 21	4 28	7 30	2 26	4 34	7 24	2 31
10	S	4 22	7 36	sets	4 28	7 30	sets	4 34	7 25	sets.
11	M	4 22	7 37	8 23	4 28	7 31	8 14	4 34	7 25	8 7
12	T	4 22	7 37	9 19	4 28	7 31	9 11	4 34	7 25	9 5
13	W	4 22	7 37	10 5	4 28	7 32	10 0	4 34	7 26	0 53
14	T	4 22	7 38	10 40	4 28	7 32	10 33	4 34	7 26	10 31
15	F	4 22	7 38	11 9	4 28	7 33	11 6	4 34	7 27	11 3
16	S	4 22	7 39	11 34	4 28	7 33	11 34	4 34	7 27	11 31
17	S	4 22	7 39	11 55	4 28	7 33	11 55	4 34	7 28	11 56
18	M	4 22	7 40	morn	4 28	7 34	morn	4 34	7 28	morn
19	T	4 22	7 40	0 17	4 28	7 34	0 19	4 34	7 28	0 20
20	W	4 22	7 40	0 40	4 29	7 34	0 43	4 34	7 28	0 47
21	T	4 23	7 40	1 5	4 29	7 34	1 9	4 35	7 28	1 13
22	F	4 23	7 40	1 35	4 29	7 35	1 42	4 35	7 29	1 47
23	S	4 23	7 41	2 12	4 29	7 35	2 19	4 35	7 29	2 26
24	S	4 24	7 41	2 55	4 30	7 35	3 3	4 35	7 29	3 11
25	M	4 24	7 41	rises	4 30	7 35	rises	4 36	7 29	rises
26	T	4 25	7 41	8 55	4 30	7 35	8 43	4 36	7 29	8 42
27	W	4 25	7 41	9 26	4 31	7 35	9 21	4 37	7 29	9 15
28	T	4 25	7 41	9 53	4 31	7 35	9 49	4 37	7 29	9 45
29	F	4 26	7 41	10 14	4 32	7 35	10 11	4 37	7 29	10 8
30	S	4 26	7 41	10 34	4 32	7 35	10 32	4 38	7 29	10 30

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	4	0 27 mo.	0 15 mo.	0 3 mo	11 51 3d.	11 21 3d.
New M'n	11	9 48 mo.	9 36 mo.	9 24 mo	9 12 mo.	8 42 mo.
1st Quart	18	1 40 mo.	1 28 mo.	1 16 mo	1 4 mo.	0 34 mo.
Full M'n	25	0 9 ev.	11 57 mo.	11 45 mo	11 33 mo.	11 3 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1877.

The reports of the growing wheat crop are generally favorable. A large majority declare the condition of the crop to indicate a full average, and more than half speak of a promise of above an average yield. A comparatively small number of places are threatened with a partial loss of crop, California presenting the least hopeful condition, on account of a serious drouth. So far as our own observation and information extends, we consider the promise of the crop to be very favorable, and if dry weather should not interfere, a fair harvest may be expected. At the same time, the country is bare of wheat, and the foreign demand is larger than usual. The experience of the past few years goes to show, that there will be no danger of "over-production" in the future. We need not fear to raise as large crops as we can. The foreign market is large and steady, and will need all we can produce in the way of grains, meats, provisions and dairy produce, to supply it. The low prices of the past few years have brought this about, and therefore have not been by any means an unmitigated evil. While we have been depressed and troubled by a reduced income from our farms, which has sorely embarrassed those who have been in debt, this has been the means of stimulating farmers generally, to do better by their farms than they had formerly done. In no previous period has stock been so much improved as during the few years just past, and we have, in consequence, found a market in England for meat, which has saved our home market from demoralization. At no time before the present, has there been so much of artificial fertilizing, and never before so anxious inquiry about the possibility of enlarging the crops, and using the most effective economy in farming operations. In the mean time thousands of persons are entering into agriculture from other industries; the wave of western emigration has broken upon a shore, where the land, although valuable for pasture, is not arable, and it now flows back again upon the neglected lands of the East, which are being restored again to their former fruitfulness, by means of more skillful cultivation. There is now a closing up of scattered ranks, and the farming interest is becoming consolidated. As population may increase, during the next twenty-five years, to double its present limit, and we have a hundred million mouths to feed in our own country alone, all the resources and skill of the farmer will be taxed to meet the demand for his products. The value of farms can hardly fail to increase year by year, on these accounts, and it will be the farmer's interest to see that he neglects no means of making his more valuable property pay a higher interest than now. This can only be done by making it more productive.

Hints for Work.

Plant every thing possible, early this month. Early kinds of corn may be put in the ground until the middle of the month, with certainty of ripening as soon as late sorts planted earlier. Or it may be planted closer for fodder.

Fodder Corn is one of the most valuable crops, especially for a dairyman. By and by we shall probably begin to preserve corn-fodder in pits and trenches, just as brewers' grains are now kept by many American dairymen, or as corn-fodder is preserved by many foreign farmers. The process, known as *ensilage*, was fully described, with illustrations, in the *American Agriculturist* for June, 1875. It would be well to refer to or procure this number, and study the process. Fodder-corn may be planted in rows 2½ feet apart, with seed dropped two inches apart in the row. Cultivate with horse-hoe as soon as the corn is above ground.

Beans are becoming a more profitable crop, now that additional attention is given to them. When planted in rows 2½ feet apart, 4 or 5 beans may be dropped every foot. By planting with the Albany planter, the beans may be dropped in a continuous row, 3 inches apart. The seed should go into light land, at least 3 inches deep in the moist soil.

Potatoes will need very close attention. It is not at all improbable that many careless farmers will lose their crop through inattention, and that the price will again be high in the fall. The Colorado beetle may be kept down by care and Paris Green, as has been frequently explained. (See page 207.) ["Potato Pests," a new book, sent, post-paid, from this office, for 50 cents, will be very valuable].

Cultivation, thorough and frequent, will greatly help all drill-sown crops, as corn, potatoes, and roots, enabling them to resist dry weather, and make a strong growth. This is very important for the potato crop, under the attacks of the beetles.

Ruta-Bagas should be sown this month; refer to the directions for root crops in previous months, as to preparation of the soil. Two pounds of seed per acre, should be sown, and it will be better to sow in drills, either with a hand or horse-planter. The rows may be made 27 to 30 inches apart, and 200 lbs. of superphosphate, drilled with the seed, will force the crop ahead of the fly. If the fly attacks them, use finely slacked lime, dry sifted coal ashes, or soot, freely sifted over them.

Mangels or Sugar Beets should be ready to hoe and thin out. 12 to 15 inches apart, is a proper distance, and vacant spaces may be filled by transplanting plants from places where they are too thick. Take up the plants with a trowel with the earth around them, without disturbing the roots. Share's horse-hoe is excellent for cultivating these root crops.

Summer-Fallows.—In some rare cases it may be well to summer-fallow. To kill weeds that are difficult to destroy and very plentiful, or to break up raw, heavy clay soils, this nearly obsolete operation may still be practised. But now it can rarely pay to keep the soil idle a whole season, when there are so many green crops that may be grown to advantage for cleaning the ground, and artificial fertilizing is so well understood. When a summer-fallow is thought advisable, begin by plowing deeply this month, before weeds have seeded the ground.

Preparing for Harvest.—No time should be lost in getting ready for haying. It would pay to procure a mowing machine and a horse-rake, if money has to be borrowed for the purpose, where ten acres of hay have to be made. In choosing machines, durability and ease of working should be looked to first; low price is a secondary consideration. Some valuable improvements in harvesting machinery have recently been noticed in the *American Agri-*

culturist, to which reference should be made when choosing a mower. When scythes are used, the rhomboidal scythe-sharpener will be found very effective. Mowers, rakes, scythes, hay-racks, barns, and stack bottoms, and any other needed facilities, should all be made ready for work without delay.

A Tool Shed is a necessity on every farm. Here should be kept machines, implements, tools, wheelbarrows, and all spare things of every sort that usually lie around loose. Every thing should be kept in its proper place, so that it could be found in the dark if needed. Habits of neatness and regularity are learned in keeping a tool shed in proper order, more, perhaps, than in any other place on the farm. When neatness in little things is learned, greater things are always taken care of.

Clover Hay is worth much more when cut early, than when cut late. Professor Atwater has given the readers of the *American Agriculturist* some very valuable hints in this respect, which should be well studied and remembered. We prefer to rake up clover before it is completely dried, and cure it in the cock for at least 24 hours. This method considerably increases the value of the hay.

The Dairy.—Cows are now in their prime, and justice should be done them, by using care and skill in the dairy. June butter is the best of the season, and may be packed, so as to keep perfectly for a year. Use only the best quality of salt, the price of which is really of no object, considering that only one ounce of it goes to a pound of butter, and the difference in the quality of the salt may easily make 5 or 10 cents a pound variation in the value of the butter.

Water.—Provide pure, fresh water for the cows, and when thinking of them, do not forget their owners, who suffer very often in health and comfort from using impure water. See that no drains, manure piles, or cesspools leak into the well, and keep the ground around it high, so that no surface-water can soak into it. A good pump should be attached to the well, and a galvanized iron pipe will prevent any bad taste in the water.

Pasture.—Do not overstock the pasture. Keep a good growth by feeding a little dry feed or grain in the evening, and bringing up the stock early. A dressing of 60 lbs. of salt or of nitrate of soda per acre will be useful to the grass, if given early this month; but when the soda is used, it should be spread during a shower of rain, so that it is at once dissolved and carried into the soil.

Sheep and Lambs.—Ewes and lambs will thrive all the better for a little extra feed. The lambs should be fed in a place by themselves, to which they can gain access easily. An enclosure, known as a "lamb-creep," will be found useful. This is a fence with openings, through which the lambs can pass, but the sheep can not. Pure water should be provided for both ewes and lambs, where they can have constant access to it.

Dipping Sheep.—To free the lambs from ticks, which worry them after the ewes have been sheared, they should be dipped. Buchan's Cresylic dip is effective in freeing the lambs from this pest.

Tagging both sheep and lambs, should not be neglected, while feeding on young grass. If looseness of the bowels occurs, the wool should be closely clipped, and if the disorder should become troublesome, a tablespoonful of peppermint water, and a teaspoonful of prepared chalk mixed with it, may be given to each lamb with good effect.

Pigs.—A piece of pasture should by all means be provided for the swine, especially for young pigs. This ensures health and healthful growth. An acre or two of orchard seeded to clover, with an open shed for shelter during storms, would be found very valuable. Keep only grade pigs of a good breed, and feed liberally; this is the secret of cheap pork. A mixture of salt, sulphur, and charcoal, given occasionally, will be useful; 4 ounces of each will be enough for a week's supply for 12 full-grown pigs. Pure water should be given plentifully.

Read the Advertisements.—Almost every day inquiries are made about matters and things which are described in the columns devoted to advertising. These matters are of great interest, and should be looked over every month. If anything is wanted, the back numbers should be referred to. It would be strange to find any useful thing missing from the columns during the past few years.

Notes on Orchard and Garden Work.

As hinted last month, whatever the earlier part of the season may have been, June 1st, take one year with another, usually finds vegetation advanced to a certain point. In June we stand at the end of most of the preparatory work, and, with but few exceptions, in advance of the harvest. Yet it is by no means an idle month, when the orchardist and gardener can enjoy his summer respite, and in that trip to the sea shore, to the mountains, or elsewhere, that he has been looking forward to.

Orchard and Nursery.

Planting being over, the young trees should not be left to shirk for themselves. One of the important things is to

Look to the Labels.—If in the hurry of planting the labels put on at the nursery were left on the trees, these must be attended to at once. They are not intended to be permanent, and are usually put on with iron wire and twisted tight. If left, the season's growth having no chance to expand, the tree will often be strangled by the wire, and well nigh ruined. We have often repeated that no one should depend upon labels, but there should be such a record that every tree on the place may be known by its position. Where the trees are in regular rows, this record is easily kept. Still, until one gets acquainted with his trees, and learned the name of each row, or single tree, labels are convenient. Use lead wire, a strip of "lace-leather," or something that will not injure the growing tree.

Mulching, in a very dry season, will save the lives of young trees, and it is always useful. See last month's "Fruit Garden."....How much future trouble would be saved if we would recollect that

Green Shoots become Woody.—What is now a tender quick-growing sprout, will in October be a strong woody branch, and perhaps a branch just where it is not wanted, and which must be removed by the use of a saw or strong knife. At the right time, the shoot could have been rubbed off, and not only the trouble of removing the branch avoided, but the useless growth would have been directed to parts where it was needed. Some one has called this

"*Anticipative Pruning*," and it is really that. If one has a careful eye to his young trees, he can, by rubbing off a bud or shoot here, and pinching a shoot there, so direct the growth that by the time the trees come into bearing, they will be of proper form, and very little work will be required of the pruning saw and chisel.

Pruning.—If large limbs are to be removed from neglected trees, this month or next (according to locality—at any rate, when the spring growth is made and the leaves have attained full size and substance) is by many preferred for the work, as wounds now heal rapidly. Cut all large wounds smooth with a drawing knife, and cover with shellac varnish, melted grafting wax, or thick paint.

Grafts set this spring must be looked to, and if shoots start from the stock, to rob them of nourishment, rub them off. It is often the case that one bud on a cion will start and make a vigorous growth of a single unbranched shoot, which will be whipped about, and likely be broken by the winds. The growth from a graft should be treated as if it were a young tree planted in the ground, instead of the wood of another tree, and properly shaped by pinching the ends of the too rapid-growing shoots.

Thinning Fruit is another important work of the month, and is especially needed upon young trees just coming into bearing. As relating to this, see "Changing the Bearing Year," on p. 182 last month. See what was said in last month's Notes on thinning. That it will pay in many cases, there is no doubt. Just which kinds of fruit may be profitably thinned, can only be learned by experience. With choice pears and with peaches it will generally give good returns. At the present writing, the prospects are good for a large crop of peaches. In such years

Only the Best Fruit Pays.—Fine, large, well-colored peaches will bring a fair price, at times when the common will hardly pay the cost of handling. The one way to get the very best is to thin, and severely. Three-fourths of the set may often be taken off and leave a full crop.

Fruit Crates and Baskets should be provided in season. Ascertain from the commission dealer what kind of packages will be most in demand.... Another important work for the month is the

Fight with Insects.—N. B.—If a chap offers to sell you something to put *on* the tree to kill borers *in* the tree, tell him to "git." If one wants you to buy a recipe for a "tree invigorator," you may pay $5 for directions to mix soft soap, sulphur, and copperas, to paint on trees—but you had better show him the front gate. If some good friend tells you to bore an inch and a quarter hole in the tree (mind the size), put in a lump of sulphur, or a teaspoonful of calomel, and then put in a pine plug, (be sure and use pine, for a cork may spoil the job), and that you can thus so sulphurize or mercurialize the plums that the curculio won't hurt them—don't do it. If people only understood

The ways of Insects, and more about "matters and things in general," they would throw away no money on useless applications, and waste no time in spoiling their trees with auger holes.

As to Curculios, there is but one way with them thus far known. After hundreds of experiments by careful men, with every proposed medication, application, and botheration, nothing but catching and killing is of the slightest use. Some of them may be caught by smoothing the ground around the trees, and placing pieces of board here and there; those that hide under these boards may be caught and killed. Still, many will go upon the trees, and these must be jarred off early in the morning, caught on a cloth and killed.

Borers do not breed in the tree, as some suppose. Every borer in the trees *went* in. The parent, winged insect, laid the egg on the bark, the little borer hatched out, at once bored its way into the tree, and there it will stay until it comes out as a perfect insect, or is cut out, or is punched to death in the hole. But please observe, no patent stuff that is to be laid in the crotch of the tree, no stuff that you may paint on the trunk, no "invigorator," or any thing that you apply to the soil to be taken up by the roots and thus poison the borer, will be of any earthly use. While you are fussing with such treatment, the borer is quietly at work, perhaps stopping now and then, to laugh at the folly of the performance. Cut with knife and punch with wire.

The Slug, so called, but which is really a caterpillar, will appear, especially on the pear and cherry leaves, and, unless checked, often make sad work. It is a dark-green leech-like creature, that leaves a slimy trail. Slaked lime, dusted from a coarse bag at the end of a pole, will soon end it. In a dry time fine dust from the road may be thrown into the trees with good effect.

Marketing.—Our southern friends should know that while early peaches will sell well, they must be *peaches*. The miserable things that have been sent for the past two or three years, with the hope of being early, have injured those who sent them. Little woolly, green hard things, as large as hickory nuts, or larger, had better be fed to the pigs—if they will eat them. Such fruit (?) can neither be sold nor given away, in the New York or other northern markets. So with early apples—they should be carefully assorted, and come in good shape, or they will not sell.

Odds and Ends.—Keep the weeds down in nursery rows.....Weed seed beds, and if they are not already sheltered, do not wait for the seedlings to suffer, before shade of some kind is applied, as directed last month.....When a caterpillar's web is discovered, do not sleep until you know that it and its contents are disposed of.

Fruit Garden.

What is said under "Orchard" about mulching, insects, etc., applies also to the fruit garden, and much in last month's Notes should be heeded now, and we refer to them to avoid repetition.

Marketing begins with the strawberry, and the harvesting will be done this month in northern localities. We gave last month, on p. 178, so full an article on the "Berry Season," that nothing is to be added.

Blackberries and Raspberries.—Next season's fruiting is to be provided for by the shoots or stalks now growing. Tie up, to prevent accidents, such of these as are to remain, and hoe up all others. In picking, raspberries require delicate handling, as they crush easily. When the picking is over, cut out the canes that have fruited.

Black-Caps do not sucker, but throw up new stems from the base of the plant; these should not be allowed to become too crowded; remove all the shoots not wanted while they are young.

Thinning is even more necessary on dwarf than on standard pears, as they are more apt to overbear.

Grape Vines will need frequent attention. As the shoots grow they must be tied to the trellis, or a high wind will either break or entangle them Remove all shoots that start where canes are not wanted, and in case of double buds, take out one shoot, taking the weaker one. In close pruning, the shoots are stopped (by pinching off their ends) just above the uppermost cluster. Some leave but a single leaf, and think it better than two, three, or more. We are governed by the form of trellis, preferring to keep that filled with foliage, to following any set rule....Treat rose-bugs and mildew as noted last month....Soon the large beetles and the large caterpillars will appear; they are never very numerous, and the only remedy is hand-picking.

Kitchen and Market Garden.

The lively time with the weeds fairly sets in this month. It is well to bear in mind that a weed that to-day has so slight a hold on the soil that it is killed as easily as a tender exotic, in a few days will be so well established, as to be difficult of removal. Some one has said that "the time to kill weeds is just before they appear," and if taken to mean, "just before they make much show," it is true. The use of

The Rake is not half understood or appreciated. A heavy steel rake, with long and sharp teeth, is one of the most effective weed-killing implements we have. It gets over the surface rapidly, and if run over the surface, will uproot the young weeds and leave them where the sun will soon finish them. The rake is not a complete substitute for those that stir the soil more deeply and thoroughly, but it is an indispensable aid to these if one would keep the garden clear.

Succession crops should be looked out for. The season of many vegetables, which remain for but a short time in their best condition, may be greatly prolonged by proper forethought, in sowing at intervals. For example, we make it a point to have green corn daily, from the first picking until frost puts an end to the season. If there is a surplus, it does not come amiss, as the ears, allowed to get harder than their table condition, are a great treat to the pigs, and the fodder is cured for the cows.

Unoccupied soil should never be seen in the garden. As soon as one crop is off, give the soil a freshening up with manure, and put in something. Recollect that weeds will have to be killed at any rate, and it is better to have the work of doing this turned to account of some crop. Judgment must be used in the choice of things to occupy the land. The plants will have to endure the hottest part of the season, and lettuce, radishes, spinach, peas, etc., would fail, while beans, and all of the cucumber and squash family will be suited. It is well to have extra cabbage plants for this use.

Asparagus should have a rest when peas are ready. When cutting is stopped, the plants soon so shade the ground that few weeds will grow.

Beans.—Plant bush sorts in succession, and in northern localities it will be early enough for Limas.

Beets.—Thin and weed; sow succession crops of early sorts, for beet greens, as well as the roots.

Cabbages.—As soon as the crop of early is off, prepare the ground for celery or other late crops. Set out plants of medium late sorts.

Carrots sown early in the month will usually make a good crop. Stir the ground whenever the plants begin to break through. Thin and weed in the rows as soon as large enough to handle, leaving at least 4 in. between them.

Celery.—Keep the seed-bed free of weeds; some for early use may be set from the middle to the end of the month.

Cucumbers.—Hurry their growth. To keep off the striped bug, some put a rag on a stick which is so stuck in the ground that the wind will flutter it over them, and scare off the bugs. White hellebore has been used with success. Plant for pickles the last of this or the first week of next month.

Egg Plants.—In view of the great fondness of the potato-bug for these, it is well to grow in pots until of good size, and then put out in a rich spot. Hand-pick the insects or poison them.

Melons.—Plant, if any have failed. They need the same care as cucumbers.

Okra may be sown where it is to stand.

Onions.—Weed and keep the soil clear between the rows; some give a dressing of salt, thinking it prevents the smut.

Peas rarely do well when planted late. If tried, sow them six inches deep in the coolest part of the garden, using the early kinds.

Potatoes.—The early sorts in the garden require the same care as those in field culture. Poison must be used, or there will be no crop; see hints for farm-work, and items in the "Basket" pages.

Rhubarb.—Cut away the flower-stalks, and pull but little for use.

Spinach.—Sow the New Zealand in well-manured hills. It is slow at first, but soon grows rapidly.

Squashes may still be sown. For striped bug see cucumbers. Hand-pick the squash-bugs, and crush their eggs, which are laid on the under side of the leaf. For the borer it is recommended to cover the stem with earth for two or three feet from the root. In working the soil do not disturb the vines, but allow them to root.

Sweet Potatoes.—Plant on well-manured ridges. See a full article on culture in March last, page 100.

Tomatoes.—Set out for late crop. In garden they should be kept trained to a trellis, to stakes, or in some way, to keep them in order, and the fruit from the ground.

Turnips of the ruta-baga sorts may be sown at the end of the month.

Odds and Ends.—A pig seems an almost necessary adjunct to a garden, or perhaps it would be better to say that a garden is necessary to the pig. At any rate, with a little care in gathering it, the refuse of the garden will go far towards the summer support of the pig.....Root crops, beets, carrots, parsnips, salsify, and scorzonera are rarely sufficiently thinned; the larger kinds should have at least 4 in., and 6 in. space between them would be better. Salsify, by thinning, may be had of twice the usual size, and make a great saving of time in preparing....If seeds are to be saved of any vegetables, select beforehand the earliest and best for this purpose, and allow none to be used from it..... Herbs.—Have a supply of the seasoning articles provided for the kitchen.....Weeds are to be fought first, last, and all the time—*except* when the ground is wet. The lance-headed hoe described last month cannot be too highly recommended; it doesn't look like much, but we could hardly do without it. Indeed, we have them made by the half dozen.

Flower Garden and Lawn.

The Notes of last month will be just as applicable now, and may be re-read with profit.

The Lawn-Mower should be used in well-established lawns at least once a week. If the grass has been allowed to get too long for the clippings to be left on the grass, rake them off.

A Grass-Hook or sickle will be needed for places inaccessible to the machine. This should be kept sharp by the use of a scythe-stone.

Trees and Shrubs.—What has been said under "Orchard" about shaping trees by the early removal of shoots not needed, and pinching, may be applied to ornamental trees and shrubs.....All the

Bedding Plants should be out now. Where there are lines of different colors they must be kept distinct by pinching back those disposed to interfere with their neighbors.

The Tender Plants from the greenhouse that are to be used outside, should be placed where winds will not injure them; they often suffer from these.

Odds and Ends.—Whether a place be large or small, neatness should always be regarded before show.....A well kept kitchen-garden is more pleasing than a neglected flower-garden.....If the ornamental grounds can not be kept in order with the force that can be afforded, they are too large..... Good keeping is made up of little things. Have all margins, where the grass borders a walk, or a flower-bed, carefully trimmed.....Every scrap of paper, chip, or other matter should be kept off of the lawn as carefully as from the best carpet..... Stakes are often required to hold tall-growing weak plants and flower-stems; they can be used and be out of sight. Avoid the horrible green things, with white, pine-apple-shaped tops; one doesn't wear gaudy crutches.....When a plant goes out of flower, cut away the clusters, unless seeds are wanted; in that case it is better to have the seed-bearers in a reserve ground.....See last month's Notes about insects on roses.....Many shrubs may be propagated from cuttings of the ripening wood..... Weeds come among flowers as well as among cabbages and must be treated in the same manner. Sharp-toothed rakes frequently run over the soil among the plants, will both keep the surface light, and uproot the young weeds. It is well to have rakes of at least two different widths, as a thickly planted border will need a narrow one. The lance-headed hoe described and figured last month under "Kitchen Garden" is quite as useful in the flower garden, and saves a great deal of hand-weeding.

Greenhouse and Window Plants.

The last cold storm is generally over—at least in the latitude of New York—by June 10th, and the weather at that time may be regarded as settled warm. By that date whatever plants are to be taken from the greenhouse, may come out, and the house put in its summer dress.....With a little care it is easy to provide a set of plants of the *Gesneria* family that will keep the house a blaze of flowers. Gesnerias, Gloxinias, Tydæas, Achimenes, etc., are all brilliant. Some of the double Geraniums, and all of the Tricolor class are much better in-doors; these, with Fuchsias, and other summer-flowering plants, will make a well-shaded and well-ventilated greenhouse an attractive place.....Shading must now be increased, unless put on heavy at first.....Insects will be rather more active than in winter, and the same means must be taken to subdue them.....See last month's Notes.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	237,100	254,000	1,570,000	51,000	198,000	573,000
26 d's *last* m'th	265,000	289,000	1,711,000	47,000	304,000	674,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	319,000	1,072,000	7,149,000	62,000	93,000	1,570,000
26 d's *last* m'th	334,000	1,265,000	2,207,000	53,000	257,000	896,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877	237,100	254,000	1,570,000	54,000	198,000	573,000
26 days 1876	294,000	1,126,000	1,334,000	83,000	221,000	903,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877	319,000	1,072,000	7,149,000	62,000	93,000	1,570,000
26 days 1876	337,000	2,628,000	1,211,000	117,000	41,000	846,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
May 7, 1877..	761,686	468,809	193,046	174,375	347,381	291,654
Apr. 10,1877..	1,782,911	1,035,654	24 ,123	320,331	606,639	311,032
Mar. 5, 1877..	2,730,641	1,711,095	288,895	513,826	822,625	335,208
Feb. 7, 1877..	3,083,819	2,302,261	3,4,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,704	341,750	905,615	1,088,104	425,406
Dec. 11,1876..	3,110 2-3	3,385,554	213 341	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,293,074	232,140	63,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,962	100,741	325,191	1,080,300	307,488

4. *Exports from New York, Jan. 1, to May 10.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas bush.
1877....	436,097	3,124 698	6,062,226	439,605	123,083	60,141	136,874
1876....	728,579	7,614,910	4,336,520	102,604	——	77,290	319,539

CURRENT WHOLESALE PRICES.

	Apr. 12.	May 12.
PRICE OF GOLD	105 7-8	107 1-4
FLOUR—Super to Extra State	$6 25 @ 7 75	$7 50 @ 8 75
Super to Extra Southern	6 40 @ 9 75	7 75 @ 12 00
Extra Western	6 85 @ 11 00	7 85 @ 13 00
Extra Genesee	7 75 @ 8 75	8 75 @ 10 25
Superfine Western	6 25 @ 6 90	7 50 @ 8 60
RYE FLOUR	3 00 @ 5 25	5 75 @ 6 50
CORN-MEAL	2 65 @ 3 50	3 10 @ 3 95
WHEAT—All kinds of White	1 60 @ 1 80	2 00 @ 2 35
All kinds of Red and Amber	1 25 @ 1 80	1 50 @ 2 25
CORN—Yellow	57 @ 60	70 @ 71
Mixed	57 @ 60	68½@ 75
White	57 @ 60	67 @ 71
OATS—Western	42 @ 57	46 @ 65
State	52 @ 60	64 @ 72
RYE	85 @ 97	95 @ 1 15
BARLEY	57½@ 1 02½	60 @ 1 12½
BARLEY MALT	65 @ 1 25	65 @ 1 35
HAY—Bale, ₱ 100 lbs	65 @ 1 00	65 @ 1 00
STRAW, ₱ 100 lbs	50 @ 75	50 @ 80
COTTON—Middlings, ₱ lb	11⅜@ 11½	10¾@ 11
HOPS—Crop of 1876, ₱ lb	8 @ 17	8 @ 20
" old, ₱ lb	4 @ 10	4 @ 10
FEATHERS—Live Geese, ₱ lb	42½@ 45	40 @ 45
SEED—Clover, ₱ lb	14 @ 15½	Nominal.
Timothy, ₱ bushel	1 85 @ 2 00	Nominal.
Flax, ₱ bushel	1 60 @ 1 75	1 55 @ 1 70
SUGAR—Refi'g & Grocery ₱ lb	7¾@ 10¾	9¼@ 11⅜
MOLASSES, Cuba, ₱ gal.50 test	— @ 42	32 @ —
New Orleans, new crop, ₱ gal	38 @ 55	45 @ 60
COFFEE—Rio (Gold)	16 @ 20	17 @ 21
TOBACCO, Kentucky, &c., ₱ lb	5 @ 18	4½@ 18
Seed Leaf, ₱ lb	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ₱ lb	27 @ 50	28 @ 50
Domestic, pulled, ₱ lb	18 @ 42	18 @ 38
California, spring clip	12 @ 28	13 @ 30
California Fall clip	12 @ 23	10 @ 21
TALLOW, ₱ lb	7⅜@ 8¾	8½@ 9
OIL-CAKE—₱ ton	33 00 @ —	37 00 @38 00
PORK—Mess, ₱ barrel	15 00 @15 10	15 50 @15 90
Extra Prime, ₱ barrel	11 50 @ —	12 00 @12 25
BEEF—Plain mess	10 00 @11 50	13 00 @13 50
LARD, in tres. & bbls, ₱ 100 lb	9 00 @10 25	8 75 @10 12½
BUTTER—State, ₱ lb	16 @ 31	10 @ 26
Western, poor to fancy, ₱ lb	10 @ 30	9½@ 25
CHEESE	6½@ 15¾	5 @ 15
BEANS—₱ bushel	1 50 @ 3 00	1 75 @ 3 90
PEAS—Canada, in bond, ₱ bu	— @ 1 10	1 15 @ 1 20
EGGS—Fresh, ₱ dozen	17 @ 18¾	11½@ 14
POULTRY—Fowls & Chickens	10 @ 15	15 @ 20
Chickens, spring, ₱ pair	— @ —	85 @ 1 75
Turkeys—₱ lb	10 @ 18	14 @ 20
Geese, ₱ pair	1 25 @ 2 50	1 12½@ 2 50
Geese, ₱ lb	8 @ 12	9 @ 13
Ducks, ₱ pair	70 @ 1 25	70 @ 1 25
" ₱ lb	13 @ 18	14 @ 20
Roosters, ₱ lb	4 @ 8	7 @ 10
Capons, ₱ lb	18 @ 22	22 @ 26
DUCKS, Wild, ₱ pair	15 @ 75	— @ —
PIGEONS, wild, ₱ dozen	1 00 @ 1 75	1 87½@ 2 50
SQUABS, per dozen	3 50 @ 3 75	2 75 @ 3 25
PLOVER, ₱ doz	1 00 @ 1 25	2 00 @ 2 50
SNIPE, per doz	35 @ 1 25	75 @ 2 75
TURNIPS ₱ bbl	75 @ 1 00	50 @ 75
CABBAGES—₱ 100	5 00 @ 12 00	5 00 @ 12 00
ONIONS—₱ bbl	3 50 @ 5 00	4 00 @ 5 00
LETTUCE, ₱ bbl	1 75 @ 3 25	2 00 @ 4 00
CARROTS, ₱ bbl	— @ —	— @ 1 00
POTATOES—₱ bbl	2 75 @ 3 87½	1 50 @ 4 00
new	3 00 @ 9 00	4 00 @ 7 50
SWEET POTATOES—₱ bbl	3 50 @ 5 00	4 00 @ 5 50
SPINACH, ₱ bbl	2 00 @ 3 00	25 @ 1 00
TOMATOES, new Bermuda, ₱ bx	1 00 @ 1 25	75 @ 1 00
BEETS, ₱ crate	2 00 @ 3 00	2 00 @ 2 50
RADISHES, ₱ 100 bunches	1 50 @ 3 00	50 @ 1 50
ASPARAGUS, ₱ doz. bunches	62½@ 1 00	1 25 @ 3 00
STRING BEANS, ₱ crate	— @ —	1 00 @ 1 75
RHUBARB, ₱ 100 bunches	— @ —	1 50 @ 3 60
CUCUMBERS, ₱ bbl	— @ —	3 00 @ 6 00
BROOM-CORN	3¾@ 8	3¾@ 8
GREEN PEAS, ₱ crate	2 00 @ 4 50	75 @ 3 00
CRANBERRIES—₱ crate	50 @ 2 50	50 @ 1 75
APPLES—₱ barrel	1 50 @ 3 75	75 @ 3 50
STRAWBERRIES, ₱ quart	— @ —	15 @ 40
SQUASH, ₱ bbl	1 75 @ 3 00	1 50 @ 2 00
PEANUTS, domestic, ₱ bush	85 @ 1 25	85 @ 1 25

Gold has been up to 107⅞, and down to 105½, closing May 12, at 107¼, as against 105⅞ on April 12; 104⅝ on March 12; 106 on Jan. 12; 107¼ on Dec. 12, 1876, and 112¾ on the 13th of May, 1876... The month under review has been remarkable for the activity, partly speculative, in domestic produce, as affected by the foreign war news, reports, and rumors. The dealings in Breadstuffs and Provisions have been on a more liberal scale, and prices have been quoted much stronger, with, however, frequent and wide fluctuations in the more prominent instances. Flour and Wheat have been decidedly dearer, and early in the month, briskly inquired for, and much excited, though comparatively dull toward the close, with part of the improvement lost. The very latest operations, however, indicated reviving firmness, favored by the more encouraging tenor of the foreign market advices. Corn has been in extraordinarily lively request for prompt and forward delivery, the speculative temper have been dominant in this line. Sales have been to very heavy aggregates, on several days having exceeded 700,000 bushels per day, and on one day running over 825,000 bushels, the bulk of which amount was represented by options on the New York grades of Steamer Mixed, and No. 2. This option feature of the business in Corn now leads all others, and the dealings, in this form, each day, are the source of much excitement. In deference to the request of many members representing the grain trade interest of the Produce Exchange, it was announced on Thursday, May 10, that on and after Monday next, May 14, formal call of options in corn would be held at 11 o'clock in the forenoon of each business day. The operations at this call, it is believed, will afford a sufficiently precise indication of the position of the New York market, at an hour early enough to be of use and advantage to the business correspondents of the members at prominent points in the interior, especially at Chicago, where dealings are always commenced early in the forenoon of each day. Another call, in the same connection, to be held after the final adjournment of 'Change, at an hour to be specified, is also talked of, 3 o'clock P. M. being the hour seemingly in most favor. Oats have also been very brisk, and much higher in price under speculative action, based on the assumption of deficient supplies, but, toward the close, arrivals of Western product, by rail, were comparatively free, which circumstance discouraged buyers, and lead to a sharp break in values. Really prime State products, mixed and white, heavy as to weight, and up to the standard in color, have been scarce and held with a fair show of confidence. Rye has been carried up materially in price, by speculative manipulation—State, to arrive, up to $1.25, and Western, here, $1.15 @ $1.18, but for a week or two past have been extremely dull and yielding, leaving off at $1.10 bid, and $1.15 asked for State, and $1.05 asked, and 95c. bid for No. 2 Western. Barley has been in very moderate request for home use, the scarcity of prime new crop, and the advanced figures claimed by sellers, tending to impede operations. Further important amounts of Feed Barley, of about the standard of No. 3 Western, have been taken for export, mostly for the English markets, the latest at 60 @ 62c. ₱ bushel. The bulk of the stock now here is of this class. Export purchases, generally, have been checked by the very marked rise in values, yet the principal holders, at the close, seem firm in their views, anticipating even a higher range of quotations later on, calculating especially on the aid of the development of the war issues between Russia and Turkey....Cotton has been less active, closing lower....Tobacco and Wool have been selling to a fair extent, leaving off steadily at quotations... Hops have been moderately sought after, at about previous figures... Grass Seeds have been partially neglected, the season of activity being at an end, and prices quoted wholly nominal....A good demand has been reported for Rice and Hay; and a very brisk inquiry for Groceries, prices of Sugar, Molasses, and Coffee advancing notably. ....Ocean Freights have been more active and higher, but toward the close again depressed and unsettled....Grain rates by steam to Liverpool closed on the 12th of May at 5¼*d.*, (having been during the month as low as 4*d.*, and as high as 8⅜ @ 9*d.*); to Glasgow at 4¾*d.*; to London at 4¼*d.*; to Liverpool, by sail, nominal; London, by sail, nominal, per bushel. Provisions by steam to Liverpool, 40*s.* @ 50*s.* per ton; Cotton by sail and steam at ¼*d.* @ $^9/_{32}$*d.* ₱ lb. Grain, by sail, for Cork and orders, at 5*s.*9*d.* @6*s.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.
Apr. 16	10,495	65	3,144	14,056	25,508
Apr. 23	11,927	75	3,127	20,986	29,195
Apr. 30	10,193	52	4,102	17,812	26,032
May 7	12,670	66	5,907	16,811	31,120
May 14	9,827	73	5,705	20,237	26,032
Total for 5 Weeks	55,057	331	21,545	93,013	138,787
do. *for prev. 4 Weeks*	40,018	256	6,569	84,901	82,844
	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	13,761	66	4,309	18,602	27,757
do. do. *last Month*	10,019	63	1,577	21,225	20,711
do. do. *prev's Month*	8,582	112	834	18,185	17,559

Beeves.—The past month's business opened strong and active, with an advance in prices. This was due as much to the better quality of cattle as any other reason, and this is seen from the fact that in the first week of our report 300 head were over 1,400 lbs., and 500 were over 1,300 lbs. 725 head of these cattle went to Europe. This business is still extending, and some new firms have entered it, notwithstanding drawbacks which interfere with it, and which we pointed out at the beginning of the trade. These are, the effects of warm weather, uncertain length of voyages, the depression in the English market due to the arrival of several cargoes nearly together at unfavorable times, and the absolute necessity for immediate sale. There is also the double effect, tending all the same way, of higher prices here and lower rates there. Notwithstanding, the business is established, and though it may fluctuate, it is not likely to cease. Over 8,300 head went that way during the month. The market closed higher and strong, with few cattle lower than 10¼c., and the great majority higher, being extra good. Extra cattle of 60 lbs. to the cwt. brought 12¼@12¾c.; the average of the market being higher than since 1875.

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Apr. 16	9¼@12¾c.	10¼@11¾c.	10¾c.
Apr. 23	10 @12¾c.	10¾@11¾c.	10¾c.
Apr. 30	9¾@12¾c.	10¾@11¾c.	10¾c.
May 7	9½@12¼c.	10 @11¾c.	10½c.
May 14	10 @12¾c.	10¾@12½c.	11¼c.

Cows.—The market has been in favor of sellers, with a healthy demand, and prices are somewhat better. Poor cows bring $50; fair, $60; fine, $65, and something extra to fancy, $70@$80; one which meets the exact wants of a critical buyer brings $90.

Calves.—The month's business in calves has been a real "slaughter of the innocents." Beginning badly, with many unsold and offered in vain at 3c. ₱ lb., the market progressed, or rather went back under very large receipts and the influence of warm weather. Dressed veals dragged slowly, and no more are wanted at any price. At the close it required pretty good calves to bring 5¼c. ₱ lb., live weight, and 6¼.@7c. was paid for selected choice veals; ordinary brought only 4@5¼c. ₱ lb. It is a matter for regret that most of the calves sent to market were not kept at home and raised for beef.

Sheep are now coming in without their fleeces, and only sheared are quoted. Poor sold at 4¼@5¼c. ₱ lb., live weight; good for 5¼@6c., and prime brought at the close 6¼@6¾c., which was ¼c. ₱ lb. advance on previous sales. Lambs brought 9@11c. ₱ lb., alive, for fair, and 12@13c. for choice. Some Virginia and North Carolina lambs have come to hand, selling for $5@$6 per head.

Swine have been on the rise during the month; live closing at 5¼@6c. ₱ lb., and City dressed at 7@7¼c. ₱ lb. Some Western dressed out of refrigerator cars sold at nearly the rates for city dressed.

Prices of Feed.

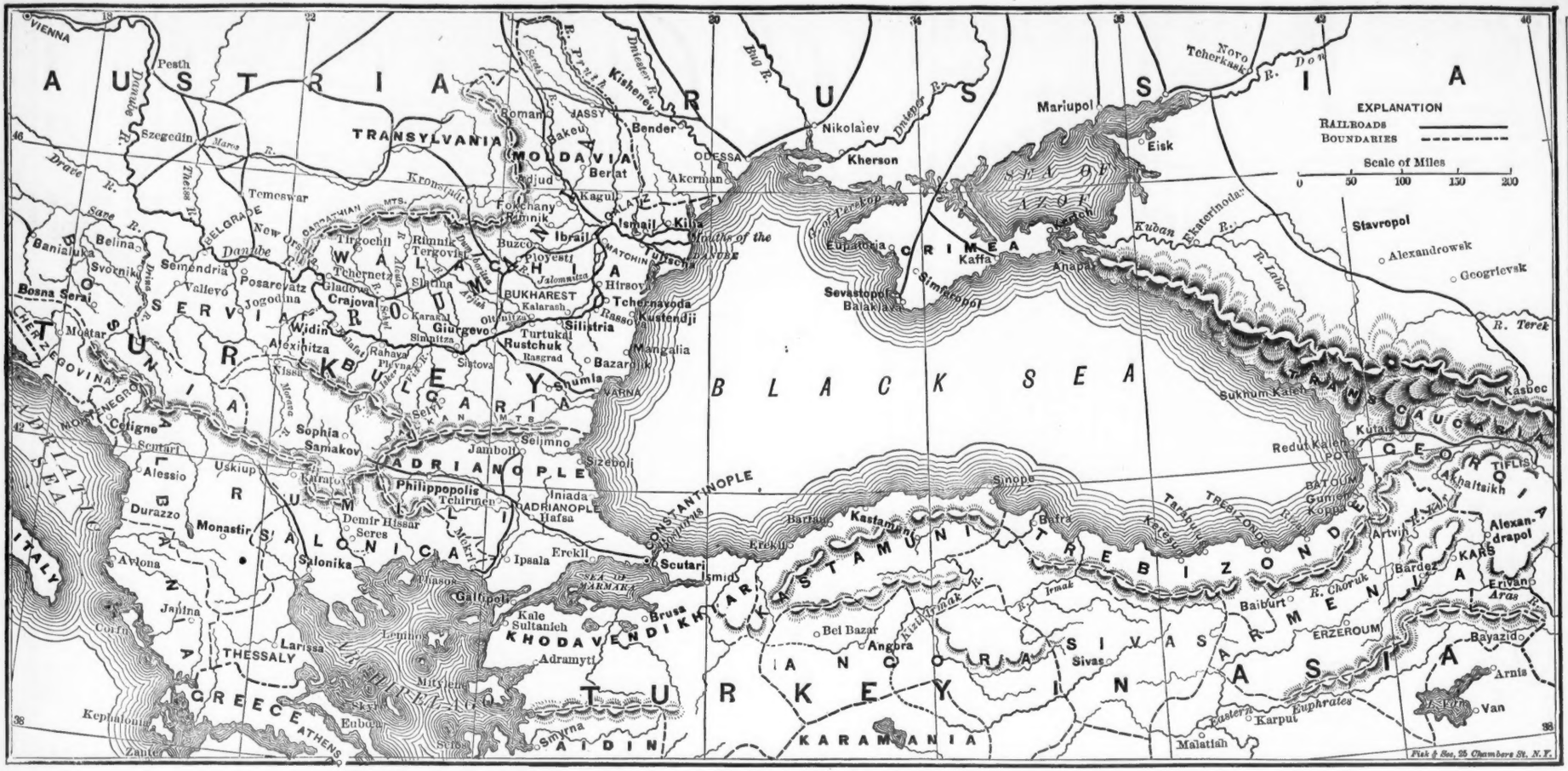
Bran, per ton	$18.00@ $20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ₱	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.00
do. do. guaranteed, ₱ ton, cargo C	56.00
do do. rectified, per ton, 10 p. c.	66.00
Mapes' Complete Manure (Vitle formula) p. 1,000 lbs	26.14
" Potato do do do do	25.97
" Turnip do do do do	19.30
" Fine Bone, strictly pure ...per ton	40.00
" Dissolved Bone, 15 per cent do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton	42.00
Stockbridge Corn Manure, (Boston) per acre	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
German Potash Salts, (25@35 per cent), per ton	20.00
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb	9½c.
Sulphate of Potash (80 per cent) per lb	4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2½c.@ 3 c.
Nitrate of Soda, per lb	4¼c.@ 4¾c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

Brown (Rye and Indian) Bread.—"J. R.," New Bedford, Mass., thinks that the recipe given in February last, p. 47, is objectionable on account of the soda it contains, and we are glad that she does, as it is the cause of her sending a recipe that has been "handed down" in her circle since the early part of the century. As to soda, we disapprove of its excessive or inconsiderate use as much as any one can, and think that it were better to banish it from the kitchen altogether than to use it as many do. But where it is used to neutralize an acid, the article is made lighter by the liberation of gas, and improved. Soda may be judiciously used with sour milk, buttermilk, or with molasses, which contains a considerable amount of free acid; hence it is allowable in the recipe referred to, though perhaps the quantity may be more than is needed. In New England the name Brown Bread is given—so far as we have observed—to rye and Indian bread exclusively, while in other States bread, made in whole or in part of Graham flour, is often called brown bread. The term, Boston brown-bread, often applied to rye and Indian elsewhere, is seldom heard in New England. Our correspondent says: "Take of Indian and rye meal one quart each, brown sugar an even cupful, and of salt a scant teaspoonful. Stir well together, while dry; then add a teacupful of home-made yeast and a quart of warm (*not hot*) water. Mix thoroughly and put into an iron or earthen pan, smooth the top with a wooden spoon wet in cold water. Put it in a warm place, to rise, until the top begins to crack, then bake in a moderate oven from three to four hours, or steam five hours, and then dry the crust in an oven a short time."

Potato Salad, writes "T," is a regular dish at the German restaurants, and Americans who become acquainted with it, are not slow to adopt it. We find it very acceptable at lunch, and in warm weather with a cold meat dinner all the family prefer it to hot potatoes in any form. There is no regular rule for making it; the needed articles are cold boiled potatoes, chives (or a small onion), parsley, salt, pepper, vinegar, and oil. Slice the potatoes thin; chop the chives (or onion) and parsley fine. Put a layer of sliced potatoes in a dish, sprinkle on chives, parsley, salt, and pepper, then pour over vinegar and oil enough to thoroughly moisten the whole, another layer of potatoes, and so on. It is better to make it an hour or two before serving, and carefully turn once or twice, or stir in such a manner as not to break the slices. As some of the family do not like oil, we mix the salad with vinegar only, and those who like oil, add it to their own portion at the table.



MAP OF THE SEAT OF WAR.—*Drawn and Engraved Specially for the American Agriculturist.*

The war now raging in Europe is of great interest to all the rest of the world, in its humanitarian and political aspects.—It is of special interest to American farmers, because the great supplies of wheat usually grown in the country west of and around the Black Sea, and supplied to Great Britain and Western Europe, must necessarily be largely diminished during the war, and these supplies must mainly come from America.

[To enable our readers to follow intelligently the leading movements of the contending armies, we have had the above map prepared. It is the most complete one we have yet seen, embracing the whole country involved, and being in clear, well printed form, it is worth preserving for continued references.]

The Russian armies are advancing upon Turkey in two distinct divisions, a thousand miles apart—one moving down through Roumania, west of the Black Sea, upon Turkey in Europe; the other down through the Caucasus east of the Black Sea upon Eastern Asia Minor, or Turkey in Asia.

RUSSIA.—The United States, including its Territories, covers 3,603,884 square miles. Russia in Europe, including her Finland and Poland territory, covering 2,088,884 square miles—about 4/7ths the size of the U. S. Russia in Asia covers 6,262,216 square miles. Total 8,351,094 square miles, or about 2¼ times the area of the United States.—Population of Russia in Europe 73,563,118; of Russia in Asia 12,122,827. Total population 85,685,945, or about double that of the United States.

TURKEY.—Area in Europe, 140,000 square miles, equal to N. Y., N. J., Penn., and Ohio. Turkey in Asia, 760,000 square miles, or one-fifth of the United States.—POPULATION in Europe 8,500,000; in Asia 13,200,000. Total 21,700,000, or about half that of the United States. The various Dependencies of Turkey, as Egypt, Arabia, etc., have an area of some 1,300,000 square miles, and a population of 26,000,000.

The **Black Sea** covers an area of 180,000 square miles, extending 700 miles from east to west, and 400 miles from north to south. Its varying coast line is full 2,000 miles. (It is nearly six times as large as our largest inland lake, *Superior*, which covers 32,000 square miles, being 360 miles long, and 140 miles wide, with a coast line of 1,500.) The water of the Black Sea is brackish, but not so salt as that of the open ocean.

The **Danube River,** which flows through the western field of war, is 1,820 miles long. At Ulm it is 1,500 feet above the sea level, and at Vienna 500 feet, which it falls in the rest of its course to the Black Sea. (The Mississippi River is 2,200 miles from St. Paul to the Gulf of Mexico). The Danube makes a great bend northward in Roumania, and enters the Black Sea through several branches, like our Mississippi.—The country between the northward bend of the Danube and the Black Sea, between Silistria and Ismail on the map, is called the **"Dobrudja,"** so often referred to in the war news dispatches. It is a somewhat flat country, and fertile. The four strongly fortified cities of Varna, Shumla, Rustchuk, and Silistria, are termed the Turkish "Quadrilateral" of defense.

ROUMANIA, comprising Moldavia and Wallachia, on the northern side of the Danube, now occupied by the Western Division of the Russian Army, contains 46,708 square miles, (about the same as New York, 47,000 sq. miles, or Pennsylvania, 46,000 sq. miles). It is a very rich agricultural country, and until now has been a dependency of Turkey in Europe.

The following estimated Population of some of the principal Cities, within or near the seat of the war, will be interesting for constant reference. These cities will be found on the map:

IN EUROPE.	*Population.*
Adrianople	125,000
Bukharest	142,000
Constantinople	500,000
Galatz	80,000
Ismail	21,000
Jassy	90,000
Odessa	121,000
Philippolis	45,000
Rustchuck	30,000
Salonica	70,000
Shumla	20,000
Sevastopol	12,000
Silistria	20,000
Scutari	70,000
Varna	20,000
Widin	25,000
IN ASIA MINOR.	
Alexandropol	17,000
Bayazid	10,000
Brusa	103,000
Erzeroum	45,000
Poti	7,000
Sinope	10,000
Trebizonde	40,000
Batoum	3,000
Diarbekir	35,000

Ending June 30, 1877, At 6 O'clock, P. M.

The Publishers have, since November last, offered a fine list of Premium Articles to those procuring subscribers to this Journal for 1877. The offer extends to the above date, when it will be positively withdrawn, as their contract with manufacturers of the Premium articles was only made for a definite period. (A reserve and exception is made, however, in favor of those residing at points too distant to be reached by this paper, and letters returned within two weeks. ☞ All such persons will be allowed 4 weeks *after receiving this paper*, to complete premiums in progress, and to make up *new* premium clubs, as many can do. Our numerous friends in Australia, New Zealand, South Africa, etc., can therefore continue gathering subscribers for a month after getting this June number, and then forward them in time to have the benefit of this year's premium offer. (Only those marked with a * can be sent by mail to Australia and New Zealand, post-paid, by the Publishers.)

Over 18,000 Persons

have secured these Premiums and in **499** cases of every **500**, with great satisfaction.

Many more have clubs partly made up. They should be promptly filled out **now**, as the Premium Offers only extend to the end of June.

10,000 New Clubs Can be started and easily made up during June.

There are many fine things in our Premium List, and you can get one or more of them **without money**, and with only a few minutes time. See part of them below.

Is not this Journal, with all its Illustrations, its variety of reading, its large size, and low price, well worth all its cost?

If it is, explain this to a few friends and neighbors, and offer to send on their names as subscribers. It will cost you but a little effort, *while for every three names or more*, at the full subscription rates, the Publishers will present you with a valuable article worth having, as named below.

Many persons collect five to twenty-five names a day, receive our Premiums, and sell them. But in all June, **YOU, READER,** *can easily* get three, five, ten, twenty, or more names, and receive a nice Premium, as follows:

☞We will present to you, **free,** for sending Only . . . . **3 Subscribers,** (at $1.60 each, a year,)

A **Pocket Tool Holder**; or **Apple Parer,** or **Corer** and **Slicer**; or **Cherry Stoner**; or **Crandall's Acrobats**; or Payson's **Indelible Ink** with **Pen***; or Moore's **Floral Set**; or Self-Adjusting Gold-Plated **Watch Key***, etc., (each worth $1 to $1.50).

For only **4 Subscribers,**

Fine **Pocket Knife***; or **Bracket Saw***; or Patent Revolving **Pencil**; or Patent Magic Bell Head **Pencil***; or Houchin's Pocket **Cook Stove**; or Abbott's Pocket **Microscope***; or Bay State Apple **Paring and Slicing Machine,** etc.

For only **5 Subscribers,**

Lady's Magic Charm **Pencil***; or Crandall's **Building Blocks.**

OUR BASKET

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (50 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Cheaper Clothing.—The price of Clothing has fallen, in common with most other necessaries of life,—much more than the price of farm products. Those having garments to buy, will be interested in the advertisement of Messrs. Foote & Richardson (page 230), who have long done a reputable and prosperous business on Fulton street, and have now come over to Broadway, where they have enlarged facilities. They state what is true in every other business, as well as in theirs, that only by fair and square dealing, consulting the interest of one's customers quite as much as his own immediate profit, can one hope and expect to build up and maintain, through a series of years, a business that shall be both honorable, and in the end the most profitable.

Equalizing Postage—New York and New Zealand.—To send this paper through the P. O. to a regular subscriber in New York City, even if but a square or two away, the publishers must pre-pay 24 cents a year. They send it pre-paid to many hundreds of regular subscribers in New Zealand, and to a multitude in Australia, on the other side of the earth, at precisely the same postage rate, 24 cents a year!—Half-ounce letters now go to *nearly* every country in Europe, at the uniform cost of 5 cents, and to many other distant regions, as Japan, Australia, etc.

The Colorado Beetle and Paris Green.—The potato beetle is very active, and it has been necessary to use Paris green as soon as the potatoes have appeared above the ground. Many persons who allowed their potatoes to be destroyed last year, are anxious to save them this season, and the inquiries for *pure* Paris green are very frequent. We have been at some trouble to learn all about the sources of supply of this article. Devoe & Co., of Fulton and William streets, New York, manufacture a pure article, and in cases where local dealers cannot supply it, are willing to supply it direct to consumers. A very convenient manner of procuring it is in 14-lb. or larger cans, which can be sent cheaply and safely by express, and if too large for one can be divided amongst neighbors. *The utmost caution must be observed in using this article, as it is a deadly poison*, whether taken by the mouth or in a wound.

Salt for Stock.—"G." It is not always safe to keep a large quantity of salt where stock can get free access to it. Sometimes an animal will take too much of it, in which case it is an active irritant poison.

German Millet.—"A. C.," East Cleveland, Ohio. German millet is a form of the Hungarian grass. It is a good crop to raise for fodder on good soil, and may be sown late this month or in July. Two pecks of seed should be sown per acre.

As Usual, the Reader will find a full display by *good* parties, of a great variety of plants, implements, machinery, and many other things, as set forth on the second cover and some other pages of this Journal. One can there learn, without going from his fire-side, concerning a multitude of articles and enterprises. Those in charge of that department are instructed to "admit no quacks or quackery, and only those who have the *ability* and the *intention* to do what they promise to do in their advertisements." Our readers will find it profitable to take a stroll all through this department, not only to find the best places to get what they want, but also to gather useful business hints by seeing what others are doing, what they say, and how they say it. It is always well when corresponding with these men in ordering, inquiring, sending for circulars, etc., to inform them that you made their acquaintance through the pages of the *American Agriculturist*; it will do no harm, and may be of double advantage.

Sprouting Seed for Late Planting.—"W.," Fayette Co., Ill. When seed intended for late planting is sprouted, it is necessary to plant it as soon as the germ has started, and with great care. If the sprout dries, or is broken off, the seed will be worthless.

Cow Leaking Milk.—"C. L. B.," Kent Co., R. I. The cause of a cow leaking milk, is a looseness of the muscular ring, which closes the orifice of the teat. There is no cure for this. The leaking may be prevented, to some extent, if not altogether, by milking the cow three times a day. It has been recommended to apply to the ends of the teats, after milking, a drop of photographer's collodion.

Humbugs—The War.—The usual humbug article is crowded out this month by the war map, which seemed to us to be an important matter for many of our readers who have not at hand full charts of the country which is now the scene of a great struggle that may run into one of the greatest wars of this century. It may come to a speedy termination, but may yet involve the greater portion of Europe. Our Map, with the accompanying notes, will be found quite instructive. It will furnish an interesting geographical lesson for the children in every family, and we suggest that they be questioned both on the map and the notes, so as to fix the figures, etc., in their memories.

American Agriculturist for June

Is a valuable number, containing, among other things, full Calendar of Work for the Month, with many directions and suggestions; a very complete, clearly printed Map of the entire Seat of War, and comprehensive notes of size and population of Russia and Turkey, population of 25 of the cities, the Black Sea, Danube, etc.; Portraits and Description of eight Prize Dogs of six leading varieties; Peter Henderson on Nurseries and Greenhouses Here and Abroad; Ogden Farm Papers; Science Applied to Farming; a $2,000 Cottage, with engraved plans, and all items of cost; Arabian and Percheron Horses, with illustrations; Among the Farmers, by One of Them, a famous Stone Barn, Dairying, Shipping Horses; Talk on Farm Crops, Corn and Beans; Horse Diseases; a dozen Farm Implements and Conveniences, with descriptions and 20 engravings; Pure Milk for Villages; Frauds in Butter; Lessons from Russian Agriculture; New Enemy to our Forest Trees; Sundry Ornamental Plants, etc., with engravings; Prof. Gray on Fertilization; Faith Rochester's Practical Talks with Housekeepers; Mosquito and Fly Guards; three illustrated pages for Boys and Girls, etc., etc.—15 cents a number, $1.60 a year. Orange Judd Company, New York.

"A Fairbanks" is a convenient synonym for a weighing machine or scales, as nearly perfect of its kind as it is possible to procure, whether it occupies a place on the druggist's counter, or is at a freight depot, and large enough to weigh a loaded train. The firm of Fairbanks & Co. have a world-wide reputation, and we are glad to learn that, since the Centennial, their already important foreign trade has increased in a most gratifying manner. Every well appointed farm should have the means of weighing every thing that is sold from it or bought for it, and this can be supplied by Fairbanks & Co.

North Carolina ahead of New Jersey.—Those who do not know what improvement has taken place in the past few years, regard the Southern States as much behind others in agricultural progress. So far from this being the case, Georgia has a Department of Agriculture, that for real usefulness to the farmers of the State, is superior to any other we know of. Later, North Carolina has waked up, and an Experiment Station has just been organized, and placed in charge of Prof. A. R. Ledoux, who will at once exercise a control over the fertilizer trade similar to that which exists in Connecticut. Last winter the Board of Agriculture of New Jersey, applied to the Legislature of that State for a small appropriation to start an Experiment Station. The Legislature, composed largely of lawyers, laughed down and turned the affair into ridicule. The legislators of North Carolina, in this respect, are more wide-awake to the interests of the farmers than those of New Jersey.

Small Fruit Culture in N. J.—There is no doubt that the growing of strawberries and other small fruits for market, began in those portions of New Jersey opposite to New York. The business, now so important and extended, had a very small beginning; at first the growers took their own fruit to the city in small baskets, strung on poles, and hawked it about the streets. At the Annual Meeting of the N. J. State Horticultural Society, Mr. C. W. Idell called attention to the fact that but little is known of the early history of this culture, and gave a number of interesting items which he had gathered in conversation with some of the "oldest inhabitants" of Bergen Co. These gave the Society a desire to know more, and a committee was appointed to gather statistics and materials for a history of small fruit culture in the State. We hope that all who have any facts concerning the introduction of the early varieties of these fruits, or any other points in the history of the culture, will place themselves in correspondence with C. W. Idell, 227 Washington St., N. Y.

The American Pomological Society will hold its 16th biennial session at Baltimore, Md., on Sept. 12th next, and continue for three days. It is none too early for distant members to so arrange their plans as to be present at this, which promises to be a most interesting gathering. We learn from friends in Baltimore that preparations for the meeting are already going forward. The Maryland Horticultural Society, at whose invitation the Society meets there, will hold their Annual Exhibition at the same time, and hope to out-do themselves. Col. Wilder, whose health has been a cause of anxiety, now writes cheerfully of his improved condition, and hopes to be in the President's chair, a hope in which all pomologists will join.

Autumn Fairs.—Nebraska, and Washington Co., R. I.—the far East and the far West, set an example that other States and Counties should follow. They have decided when their fairs are to be held, and *give us timely notice*. We hope that secretaries of State and other Societies will favor us with early notice of the holding of their fairs. We would suggest to the County Societies the propriety of naming the *State* in their circulars. "Washington Co." or "Franklin Co.," are not especially definite as to locality.

Fertilizing value of Apple Pomace.—"C. G. S.," Dauphin Co., Pa. Apple pomace has very little value as a fertilizer. The best manner of using it is to feed it to cows, swine, and horses, all of which will readily eat it, either when fresh, or preserved in barrels or even in a compact heap. It will remain fit for use for several months, and when fed in small quantities, will be a healthful addition to the ordinary feed. If used for manure, it should be composted with lime, when it will be worth as much as so much swamp muck.

Poland-China Record.—We are glad to notice that a Record for pure bred Poland-China Swine is proposed, and hope it will be carried into execution. We understand that Mr. Carl Freigan, of Washington, Fayette Co., Ohio, proposes to undertake the work. Under the system proposed by him, of recording anything that may be sent in, doubtless much mischief may result. This work should be under the supervision of an association of breeders, who would be interested in preserving the purity of the breed, and not be controlled by one individual, with whom profit may be the chief object. This popular and valuable breed of swine should not be exposed to the possible injury that might result from the recording, and endorsement, of ill bred animals, as a hitherto good reputation might be seriously endangered.

New White Hydrangea "Thomas Hogg."—In October last, we gave some account of this as a new addition to our collections, of great promise, and gave an engraving which, being much reduced in size, failed to give a proper idea of the plant. Recently, through the attention of Mr. John Cadness, of Flushing, L. I., the florist into whose hands the plant fortunately fell, we have been able to see a fair specimen. A stem 15 inches high is surmounted by a broad cluster which is but a trifle short of a foot across; the individual florets are from two to two and a half inches across. Like the common Hydrangeas the flowers of this are at first greenish, but at length, when fully developed, become of a clear full white. This is manifestly one of the finest plants of late years, and Mr. Hogg and Mr. Cadness, the one as the discoverer, and the other as the disseminator, deserve the thanks and congratulations of all lovers of fine plants.

To prevent Calves from Sucking.—"C. C. P.," Galveston, Texas. In the *American Agriculturist* of November, 1876, a description and illustration were given of a perforated bit to be worn by weaning calves, for the purpose of preventing them from sucking. Very full directions are there given so that the bit may be made by any blacksmith.

Gapes in Chickens.—"O. K.," Hart Co., Ky. To prevent gapes in chickens, it is only necessary to have each year fresh ground upon which fowls have not been previously kept. This may be done, either by spading old ground deeply each year, or providing a different locality for the poultry yard.

Carting Nightsoil.—"Subscriber," Pemberton, N. J. It would not pay to cart nightsoil 15 miles if it were mixed with several times its bulk of coarse coal ashes. For the cost of cartage, (say $3) 100 lbs. of guano could be bought, which would be worth as much as 1000 lbs. of ordinary wet night soil, free from ashes.

How to Treat a Biting Horse.—"J. J. C.," Hartford, Wis. If the horse is dangerous use a muzzle; if not so bad as that, punish the animal at each attempt to bite by a smart blow on the nose with a switch or a slap with the open hand.

Questions relating to Poultry.—"M. J. McC.," Hartford, Ct. The thickened scales on the legs of poultry are caused by a mite, similar to the scab-mite of the sheep, which burrows beneath the skin. The remedy is to apply to the legs of the fowls a mixture of one ounce of lard, one teaspoonful of kerosene oil, and one teaspoonful of sulphur, well mixed and rubbed together. Rub this on the affected legs every night, until a cure is effected. Leg-weakness may be prevented or cured by giving in the feed a teaspoonful of cayenne pepper and one of sulphate of iron, (copperas), for every dozen fowls, once in two days, and continued for a week. Wheat is perhaps the best food for poultry as a steady diet. Too much corn is not good.

Weight of Pigs.—The Secretary of Lancaster Co., (Pa.) Agricultural Society, sends the following account of eight pigs raised by Levi W. Groff, of Lancaster Co., being the first litter of a young sow; they were dropped June 16th, '76. On Nov. 27th, three of the smallest of the lot, then 5 months and 10 days old, were killed, the dressed weight of each respectively was 139, 151 and 159 lbs. On Jan. 2d, '77, the remaining five pigs, then 6 months and 16 days old, were killed, the dressed weight was respectively 201, 214, 228, 229 and 231 lbs. Total net weight of last five killed being 1,103 lbs., an average of 220⅗ lbs. net weight each. The average age of the lot was 182½ days. Average net weight, 194 lbs.

Wheat Bran as a Fertilizer.—"F. M. N.," Moscow, N. Y. Wheat bran contains considerable fertilizing constituents, but yet it would not be an economical fertilizer. Peruvian guano at 3 cents a pound, bone and meat dust, or a mixture of superphosphate of lime and fish scrap, would, either of them, be much cheaper and more rapidly effective. The best and most profitable manner of utilizing wheat bran would be to feed it to pigs, or other animals, and save their manure.

The Effects of the European War upon American Agriculture.—The first effects of the war in Europe upon the produce market in this country may easily tend to mislead. The sharp rise in prices which occurred, was chiefly speculative and rapidly lost itself in a sudden reaction—leaving, however, a permanent though not very large advance. The effects of the war upon the produce business, have been largely discounted, and preparations have been made to meet it for some time back. Should the war be prolonged, it is not probable that we shall see any sudden greatly increased demand for provisions or grain, but such a steady drain towards Europe as will keep the markets at least in a satisfactory condition. Everywhere except in the Cotton States a healthy business will probably be maintained; but there the demand for cotton may fall off and prices subside somewhat. The very plain interest of farmers everywhere will be to grow as much of food crops as possible. In the South this will help to mitigate the possible loss of a market for some cotton and keep the price of a reduced crop to a higher average. In the East, North, and West, it will give farmers plenty of salable produce, which if it does not bring high prices, will at least secure satisfactory profits.

Shropshire Sheep.—"H. M. G.," Peconic, L. I. The best flock of Shropshires in America, is that of H. M. Cochrane, of the Province of Quebec, Canada. These are very valuable sheep, and are rather strangely neglected by our breeders. They are intermediate, both in wool and flesh, between the Cotswold and Southdown.

Pettengill's Newspaper Directory and Advertiser's Hand-Book.—The well known advertising firm of Messrs. S. M. Pettengill & Co. have just issued their "Advertiser's Hand-Book" for 1877. This is a complete and thorough list of all the newspapers and other periodicals published in the United States and British America. It contains also a list of newspapers *by counties*, for the special convenience of such advertisers as desire to cover certain portions of any of the States. The work is in every way creditable to the enterprising firm who issue it. As a Record, with description of the entire press of the country, it is interesting and valuable to any one. Octavo, 344 pages, bound in cloth. Price $1.00—by mail.

Questions Concerning Butter.—"T. A. G.," Livermore, Colorado. Barrels in which butter is packed, should be perfectly clean and free from any odor or taint, otherwise the butter will absorb it. An underground cellar, or cave, would be an excellent place for the storage of butter, provided it was well ventilated and free from bad odors. Ordinary soft-finish muslin may be used to pack butter in, after it has been thoroughly washed and then soaked in clean brine. Common barrel salt, if it is pure, may be used for dairy purposes, but it should be previously crushed fine, by rolling it with a large pastry roller, or pounding it with a mallet. It is best to use pure salt, such as the Ashton salt, or Onondaga factory filled. For making brine for packing butter in barrels, good ordinary salt will do, if the brine is boiled, and skimmed, and strained.

Profit in Poultry.—"D.H.M." Lancaster, Pa. We do not think that one half of those persons who keep poultry as a special business make ends meet, unless they sell eggs or fowls at fancy prices. Every one can not do this. Those only succeed who have more than usual tact, patience, perserverance, and aptness to learn, if they have not already had experience on a farm. It is not advisable for any person to embark in the business largely at first, but it would be wise to begin in a small way and let it grow by success.

Feeding a Brood Mare.—"K. S.," Lake Park, Minn. It is no injury to a mare with foal to be fed with a moderate quantity of grain, the quantity depending upon her usual rations, if the grain is good and sound, and is not solely corn. Corn and oats will do very well, but oats alone is the best food along with hay. On good pasture, when not working, the mare needs no grain. To starve the mare is bad for the colt.

Strawberries.—Mr. E. W. Durand, of Irvington, N. J., a celebrated grower of strawberries, invites all interested in the culture of that fruit to visit his place about the middle of June, to examine his large collection of varieties, mostly seedlings of his own raising.

The Department of Agriculture.—Many journals and individuals, assuming that some one is to be appointed Commissioner of Agriculture in place of the venerable Mr. Watts, are busying themselves with nominating his successor. We have been asked to advocate the appointment of no less than six different persons, and several agricultural journals have made their nominations—some of which are eminently unfit to be made. We are not especially enthusiastic in the matter, for so long as the Department is kept upon its present footing, it really does not make so very much

difference as to who is at its head. The insignificant salary, and the limited appropriations with which to work, are not very tempting to a competent man, and we doubt if we should be doing a friendly act to urge the appointment of any one to a place where his opportunities for usefulness are restricted, and where, to eke out a livelihood, he has to quarter his family in the garret of the Department Building, and put its members and servants on the pay-roll. So long as members of Congress look upon the Department as a means of supplying their constituents with garden seeds, and the Commissioner and his subordinates have to lobby for the yearly appropriation and to keep their present meagre salaries from being cut down; we do not consider the position of Commissioner a desirable one. It is true that almost any one would do more with his meagre means than any former Commissioner has yet done, and several of those whose names have been mentioned would be a great improvement upon the present incumbent, though even he is vastly better than some who are named. Still we look for a reform that goes much deeper than a mere change of Commissioners. Let Congress appoint a commission composed of representative agriculturists from every part of the country. Let these consider, 1st. Can the general government do any thing for the advancement of agriculture? 2d. What can it do? 3d. What will it cost to do it? Lastly. Who is the man to direct it? In this way the Department could be put on a proper footing: then give it all the money it can usefully employ, and if at the end of five years no results appear, stop appropriations and shut up shop. Were this done, we should here no more calls for a Grasshopper Commission; no more meetings to get some one appointed Commissioner of Forestry; no more millions of dollars running hopelessly to waste by "hog-cholera," and perhaps we should hear no more feeding of pigs and poultry on Department seeds.

Basket Items continued on page 233.

An Exhibition of Dogs in New York.

One of the most popular of the exhibitions that have occurred in many years, was recently given in New York City. This was what is known among dog-fanciers and breeders as a "bench show" of dogs. It was given under the auspices of the Westminster Kennel Club, of New York City, and turned out to be very successful. Many thousand persons visited the show, and the extensive building, the Hippodrome, formerly occupied by Barnum's Menagerie, was crowded for the three days of the exhibition. Heretofore dog-shows have been unknown in this country, at least to any noteworthy extent, but in England they are a conspicuous feature of agricultural shows, and many very extensive exhibitions are devoted exclusively to these animals. In that country, dogs are carefully bred and well kept, and many farmers are as enthusiastic dog-fanciers and breeders as any sportsmen. Consequently, there are very few complaints of trespassing and depredations upon flocks, although as many sheep are kept in that small island as in our own extensive territory, which is many times as large. As "every dog will have his day," it is to be hoped that the American dog may have his, and this animal, useful or desirable for his virtues, may, by proper care and higher consideration, be freed from his vices, consequent upon his ignorance and poor care, and be enabled to hold the place in creation for which he was undoubtedly intended. The dog deserves a better fate than he generally meets, and if well bred, well kept, and well trained, may be made a useful and respectable animal. The popularity which the bench show has met, proves the consideration in which he is held, and will undoubtedly result not only in a repetition of the show in the City of New York, but will make similar shows popular elsewhere, and tend to elevate him in public opinion. Heretofore much of the bad reputation in which dogs, especially sporting and hunting dogs, have been held, has been owing to the inconsiderate and selfish conduct of ignorant and irresponsible hunters (who are neither sportsmen nor gentlemen), and who have no idea of, nor care for, the rights of the owners of the ground over which they trespass in pursuit of game, or of the fields which the dogs scour over and the flocks which they are permitted or encouraged to chase and worry. This must all be changed, if sportsmen desire to have the sympathy of the farmers and the privilege of hunting over their grounds.

It is that a better understanding between farmers and sportsmen may be brought about, that we have noticed this exhibition, and give portraits of some of the prize dogs on page 201. The dogs represented were selected as excellent types of their different races, although not all of them were prize-winners. Prizes are given at these shows for beauty, not for usefulness, as the true qualities of the hunting dog do not lie in color or form, but in keenness of scent, sagacity, and docility. The setter and the pointer excel in these qualities, and the two setters, Nellie and Flora, whose portraits are given, are known to us as having more than an ordinary endowment of these canine virtues. Nellie, 3 years old, is owned by Milo Seagars, Bloomingburg, Sullivan county, N. Y., a noted fancier and breeder of dogs. Flora is the property of W. C. Waters, No. 1 John street, New York.

The pointer, Daisy, which took the first prize, is owned by Dr. A. R. Strachan, of the City of New York. The Chesapeake dog is a native race of Spaniel, and is used in duck hunting, so common in that locality. This breed is celebrated for its endurance and vigor, taking to the water in pursuit of game amidst ice and snow, and never flinching from work or exposure. This devotion to the wishes of its master is one of the most conspicuous canine virtues. This dog is named Trip, owned by C. H. Tilghman, of Easton, Md., and took first prize.

The shepherd's dog is the true farm dog, and no breed excels this in intelligence. To one who observes him handling a flock of sheep, he seems to possess reasoning powers; in fact, one experienced in his ways, can scarcely doubt that he does reason. The fine specimen shown is Tom Ridley, first-prize dog, owned by Mr. F. Bronson, of Wall street, New York. The pair of beagles shown are the property of Jesse Sherwood, of Edina, Mo. This class of dogs are generally tri-colored—black, tan, and white—and are used for hunting rabbits or foxes. They are a very handsome dog, and hunt in packs or pairs. The magnificent mastiff, of whose vigilance, bravery, tenacity, and patience—and at the same time, gentleness when off duty—so many stories have been told, is well represented in the specimen whose portrait is given. This is Vandal, owned by an English gentleman, from Liverpool. —We have no space to further describe the incidents of this bench show.

The Prices of Nursery and Greenhouse Products Abroad and at Home.

BY PETER HENDERSON.

While the price of labor is from one-third to one-half more in this country than in Europe, nearly all the products of the nursery, greenhouse, or garden, are sold lower here than there,—not merely lower, but in a majority of cases at less than half the price. In nursery stock, I have the authority of Messrs. Ellwanger & Barry, of Rochester, N. Y., for stating that, in many leading articles in fruit trees, the differences in prices in favor of this country are as follows: In England, "Standard" Apple-trees are quoted at $18 per 100; the same quality are sold here at $12 per 100. Dwarf Pear-trees there sell at $35 per 100; here at $15 per 100. Standard Pear, Plum and Cherry-trees average in England $18 per 100; here $15 per 100. Apricots and Nectarines are sold for about the same price here and in England, but Peach-trees, which are sold here at an average of $70 per 1000, are there sold at $150 per 1000. The general assortment of ornamental trees and shrubs show a corresponding average in favor of lower prices here. In greenhouse or bedding plants, the difference in favor of our lower rates here is even greater, both at wholesale and retail. Roses, for example, which are sold lower in Europe than almost anything else, can rarely be purchased at less than $15 per 100; here, the same quality, averages $12 per 100. Carnations, or Pinks, which are quoted in England as specially low at $20 per 100, are sold here at $12 per 100. Ferns sold here at $8 per 100, are offered at $12 there; Tuberoses and Gladioluses that are sold here at $4, are quoted there at least double these rates, while, to take the average of bedding or greenhouse plants, that may average here $10 per 100 to the trade, are offered to us by the wholesale English houses as specially low, at $12 per 100.

Owing to the unusually dry weather of last summer, nearly all our stock Fuchsias were destroyed, so that we had to import from London; the price paid was $25 per 100, the very same quality that we sell at $12 per 100. In prices at retail, particularly for new plants, the prices paid in Europe are fully four times more than what we charge here. For example, a new rose, when first offered, is sold in London at £1. 1s., the plant, about $6; here, the first sales of the same are at from $2 to $3 each. New Fuchsias or Geraniums are rarely sold in London at less than $3 each; here we think we are getting well paid if we get one-fourth of that sum. In addition to the greater price paid for the article itself, they invariably saddle us with the expense of boxes and packing, often no small item, which here is rarely charged by the florists. If we add to these, our 30 per cent. duty, which our government in its wisdom exacts for these perishable commodities, it may well be wondered that Europe can ever sell to us at all, particularly when it is known that at least one half of the imported plants are lost by injury sustained in transit. The question arises, how can our nurserymen and florists sell so much lower, and make the business pay—for that they do make it pay quite as well as European growers do, there is but little doubt. The answer to this is, the known fact that the high cost of labor, has long ago forced us to use our ingenuity in simplifying our work. What we do with the plow, the English gardener still thinks it necessary to do with the spade. What we do with our horse or hand cultivator, he still does with the hoe, and often a very primitive sort of hoe at that. Where we use stakes and labels that are made by machinery, they, in many cases, yet make them by hand, when a single one, actually, costs as much in labor as do a hundred when made by machinery. When it comes to the manual operations, necessary in the propagating and growing of greenhouse plants, the same waste of labor is apparent. Our average propagator will take off, make, and set in bench, 1,000 cuttings per day; at the rate I saw the propagators of two of the leading establishments in London working, when there a few years ago, I doubt if the average was 200 a day, and when we tell them that some of our crack workmen can place 10,000 rooted cuttings in pots in 10 hours, they honestly think it false, for probably not more than one-third of that number has ever been done in the same time there. I do not wish to be understood that the English gardener can not move as rapidly as the American can, but custom there clogs his hands with unnecessary work, to accomplish the object desired. The other day a man of 40 years of age presented himself to me, with credentials from a long established Edinburgh firm, stating him to be an experienced propagator and cultivator of plants. To test his capabilities, I handed him a lot of rose cuttings to prepare, every one of which he cut at an eye or joint, in the approved orthodox style of a quarter of a century ago; all propagators of experience here have long known, that this is not only a great waste of material, but a still greater waste of time, and we never do it unless in particular cases that very rarely occur. I might mention scores of similar operations which are performed abroad in a manner which seem to us as primitive as this.

Those who have studied the subject, tell us that from the specimens of the "stone period," at the Smithsonian Institution at Washington, there is reason to believe that it took some thousands of years for our "rude forefathers" to discover that the handles could be better fastened to their hammers of stone, by drilling a hole through them, than by lashing them to the handles with thongs; and it is a matter of not very ancient history, that in parts of the South of Ireland the plow was attached to the horses' tails, and that a great row was the consequence when some meddling innovator suggested a change. It appears that mankind,

in all ages, is naturally conservative, and it takes years, sometimes centuries, to get out of old ruts. If, while paying for labor one-third more, we can sell our garden products here nearly one-half lower than in Europe, the conclusion is inevitable, that we have learned how to make our labor more effective than they do.

The adage, that "A prophet is not without honor, save in his own country," is true in this matter as in many others; for we find that most Americans having horticultural tastes, when visiting Europe, buy largely there, their plants costing them, when duties are added, three times as much for half dead trees or plants, as they would pay at home for healthy ones. It is often the case, especially with fruits, that the varieties purchased are utterly useless for our climate. For example, the Jargonelle Pear, Ribston Pippin Apple, and Keen's Seedling Strawberry, still hold a first place in the English gardens, while experience has shown them to be worthless here. So with many ornamental trees; beautiful as are the varieties of English Holly and Rhododendrons, hundreds of Americans have poured down anathemas on the heads of European nurserymen for selling them plants as "hardy," that the frosts of our Northern States or the hot sun of the South, utterly destroyed the first season.

Ogden Farm Papers.—No. 88.

BY GEORGE E. WARING, JR.

The observation has been made that I have shown, in selecting material for these papers, an undue partiality for the Jersey race of cattle, while Short-horns, Ayrshires, Dutch, etc., are equally entitled to consideration and equally important in American agriculture. All this is quite true, but the criticism, so far as it is a fair one, would apply equally to pretty nearly the whole range of topics that I have considered during the past eight years. If any justification of my course is necessary, it is found in the title and in the first number of this series of papers. Believing that the most valuable thing that a farmer can tell to his brother farmers is that which he has learned in connection with his own business experience, and that any single farm, carefully considered, offers enough for any writer's general theme, I adopted at the outset the plan of confining myself almost exclusively to that which Ogden Farm should have to teach.

There has never been at Ogden Farm a Short-horn cow, nor an Ayrshire, nor a Dutch one. We set out at the beginning of our operation with a herd of Jerseys, and our experience has been confined exclusively to their breeding and management, and to the manufacture of butter from their milk. Everything else in our work has been incidental to the prosecution of this one industry, which has been so interwoven with my text, and has so fully occupied my practical contemplation, that my ability to write about cattle at all has been closely confined to the Jerseys. For nine years past, and since its organization, I have been the pedigree-keeper of the American Jersey Cattle Club. In short, I have been strictly a *specialist*, and in writing these papers, I have always acted on the theory—which I believe to be a sound one—that the most instructive writing is done by specialists, and that their work is valuably chiefly when they confine themselves strictly to their specialties.

The Short-horn interest is a far more important one than the Jersey interest. The amount of capital invested in thorough-breds of this race would buy up all the Jersey cattle in America ten times over. Especially in view of the rapidly growing business of exporting heavy American beef to England—an industry which promises to become one of the leading outlets for the products of American agriculture; the Short-horn interest comes still more to the front as the most important connected with the breeding of live stock. The Ayrshires are good cows, wonderfully good, so are the Dutch, and the milk and cheese interests of the country are so great that the importance of improving these breeds can hardly be overestimated. Short-horns, Ayrshires and Dutch cattle have very able advocates; men who are thoroughly well qualified to set forth their good merits. I am sure that the managers of the *American Agriculturist* would be only too glad to receive well-written articles giving practical information as to the breeding and management of these different races. Were I to attempt, as has been suggested, to write about them in these papers, I should enter a field separated from Ogden Farm by a very long lane, and should show in the first dozen lines a very decided unfitness for the task. Silence concerning these breeds must be assigned solely to the above considerations. Repeated reference to the Jerseys must be equally ascribed to the fact that my prominent interest and constant observation and investigation are applied to this breed.

Incidental to the business of farming, I have undertaken to give to the readers of the *American Agriculturist* a clear understanding of what my business has developed and suggested. Just as I was led by the draining of the farm to describe the details and principles of the work; by the use of wind-mills to relate my experience with the different kinds of mills, and pumps, and tanks; by my professional work as a Sanitary Engineer to describe what seemed to be the best means for getting rid of the liquid wastes of farm-house kitchens; by steaming a poor quality of purchased hay and corn-stalks to discuss the advantages and practical details of these processes; by soiling, to write about green rye and corn-fodder, and later about prickly comfrey; so I have been led by my experience with Jersey cattle to write about them.

Had circumstances made me acquainted with the more valuable Short-horns, I trust I should have been an equally enthusiastic advocate of the merits of that race. As it is, the one thing I have to say that is worth hearing about in cattle is about Jersey cattle, and it must at least be accepted as a fact that the value to the agriculture of our country of the increase in the amount of butter to be derived from a given amount of food, and of the increase in its market value due to improved quality, is a sufficiently important interest to claim frequent reference in a little corner of the *American Agriculturist*.

If it is occasionally hinted that we are "advertising the Jerseys," it is fair to reply that this is not the purpose of our writing. That, to a certain extent, this is an incidental effect of the writing, is, of course, true, but it is equally true of everything that is written by anybody about anything that anybody has to sell. In making known and in demonstrating by statistics the value of the Jersey as a dairy cow, I am simply giving information that any dairyman will be the better for appreciating. If he is led by my writing to buy a Jersey cow, that natural result of his acquisition of knowledge can only benefit him.

I am just now engaged in directing the draining of two swamps. One of them is the swamp in Massachusetts to which I have previously referred, and in which the experimental wind-mill pump proved to have too little capacity for its work; the other is in New Jersey, a tide-water swamp separated from an estuary of the Delaware river by a dyke. Formerly the fall of the tide afforded sufficient drainage, but the drying and compacting of the peaty soil reduced its level to such an extent that, especially in seasons of heavy rain, the low water sluice gate outlet has become insufficient. It can now be kept in good condition only by some artificial means. The plan adopted is mechanical draining by wind-power, and an 18-foot wind-mill is being erected. For each of these swamps I am constructing a modification of the drainage pump exhibited at Philadelphia, which has long been in use in Holland, the "Fijnje" draining-pump. The drawings exhibited were of a steam-pump of ninety (90) horse-power, capable of raising about 9,000 gallons of water per minute against a head of twelve (12) feet. My pump has a capacity of only about 160 gallons per minute.

The peculiarity of the pump is, that its waterway is so large that no appreciable loss of power will be caused by friction, as is the case in nearly all of our pumps driven by wind or by steam. The construction is very simple. The working parts are of brass and of iron, and the chambers and outlets of wood. The whole pump is placed so far below the lowest pumping level as to be always submerged beyond the influence of ice. The pump may be regarded as part of the dam by which the land is separated from the outlet stream. It has gates which open freely in the direction of the flow, so that without reference to the working of the pump, should the water inside rise higher than the water outside, the flow is automatic—as in the case of the common sluice gate. All that the pump does is to increase the movement of the water when highest inside, and to keep up the flow when highest outside. The delivery pipe discharges at the lowest drainage level outside the dyke, so that the pump has only to work against the resistance of the actual head of the water. At low tide, in the New Jersey swamp, the lift will never be more than two feet, and at high tide, seven feet. With a pump arranged to throw the water over a dyke, which must be two feet or so above the highest tide level, the pump would always have to work against a 9-foot head. The economy of power in the arrangement adopted is very great, and will allow the pump to work in lighter and lighter winds, as the tide level descends. With a fair breeze, the work would be done by a 14-foot mill, but in agricultural drainage it is important that the discharge should be as continuous as possible, and it is best to use a mill which will work in a light breeze.

The subject of village life for farmers, which was first broached in these papers a year or more ago, and which has been subsequently treated of in the "Atlantic Monthly," and in "Scribner's Monthly," has attracted more general attention than had seemed probable. The benefit that would result to the farmer's family, and ultimately, the great benefit that would result to the general interests of farming, from the fact that the life would be made attractive to the better class of farmers' sons and daughters, seemed undoubted. The drawback, if there is a drawback, lies in the danger that the cost of living would be somewhat increased. That is to say, a more attractive life involves some attractions, such as better dress, which would cost more money. On the whole, an investigation of the subject seems to show that, so far as the actual business expenses are concerned, the saving in some directions would be as great as the enhanced outlay in others. There only remains the question whether farming is capable of bearing even the slight additional expense that improved conditions of life imply. As this cannot be answered by any practical experience at hand, it would be safer to assume that farming itself would not bear this further tax. We must therefore seek some means to turn to profit the working force which village life would bring together.

The Shakers have been, thus far, very successful. While carrying on their farms in the best manner, they have, by a concentration of their forces, so as to allow odds and ends of time, and the work of women and children to be turned to account, been able to carry on a number of small manufacturing interests—making brooms, baskets, chairs, preserves, etc., putting up seeds, herbs, etc., which have been eminently profitable, and which have in no wise interfered with their farming.

I am told that in some of the villages of Cape Cod, nearly every member of every family who is either too old, or too young or too feeble for regular work, is constantly employed, from one end of the year to the other, in tying the strings into Dennison's tags. In another village in Massachusetts, which is surrounded by pine lands, and where pine trees are the chief crop of all but the best land, the only *money* producing industry of the community is the manufactory of "kits" for mackerel. Any one who has the curiosity to investigate the extent to which the so-called "notions" are sold, will be amazed at the aggregate amount of hand-labor, not requiring the assistance of machinery, that is constantly employed. The making of paper boxes, alone, is doubtless supporting thousands of families. The braiding of straw for hats is also widely extended, and probably a careful investiga

tion would show that a number of persons, equal to the country and village population of the whole of New England might be supported by the work of women and children and aged people—doing work that is done only by hand. Of one thing we may be sure. Should an attempt be made to concentrate the families of thirty or forty farmers into a village, there would be no difficulty in finding some single branch of industry that would furnish employment for the inefficient members of the community. If the locations and conditions of the villages were suitable, a far more attractive and profitable field is open in the very productive industry of "taking summer boarders." The experience of village summer boarding-houses now existing, furnishes ample evidence in support of this.

Then, too, the field for coöperative industry in every branch of agriculture is almost unlimited. Whatever one man can do alone—whether in the way of breeding improved stock, cultivating grain or root crops, making butter or cheese, or selling anything that he may produce—may be much better and more effectively done if twenty of his near neighbors are engaged in the same interests, and if their forces are united to secure the best males, the best seeds, and implements, the best means of manufacture, and the best reputation in the market.

We are, of course, a very long way off from any such radical change of our customs as the village idea suggests, and, in one sense, it is a waste of words to talk about the details of a general scheme that nobody as yet thinks of attempting. On the other hand, however, all thoughtful men who are interested in agricultural questions are considering with no little anxiety the important problem as to what is to become of Eastern agriculture, with its best boys and girls jumping at every chance to run away from it. So long as this general truth is accepted, we may as well begin thinking, and thinking very seriously, about the ultimate means of relief. Some day, some radical steps will become necessary, and they will be more easily taken if taken at once, and in advance of the driving necessity. These considerations are quite enough to justify a good deal of thinking and no little writing on the subject.

Science Applied to Farming.—XXX.

More Farm Experiments with Fertilizers.

To the account of experiments given in the last article, I am happy to be able to add one of a somewhat similar series, undertaken last summer by Dr. J. W. Alsop, Jr., of this place, with the object of gaining some indications as to what ingredients of plant-food were deficient in the soil of one of the fields of his farm. The experiments were made on the plan suggested by myself in the previous articles of this series, with a view of testing the effects of manures containing the ingredients nitrogen, phosphoric acid, and potash—parallel trials being made with plaster, (sulphate of lime), lime, and barn-yard manure. The fertilizing ingredients mentioned were furnished by materials as follows.

Nitrogen, by a mixture, (No. I), containing, in 100 parts, 70 parts of dried blood with ten per cent. of nitrogen, 15 parts of sulphate of ammonia with 20 per cent of nitrogen, and 15 parts of nitrate of soda with 15 per cent of nitrogen.

Phosphoric Acid, by an English super-phosphate, (No. II), containing 23 per cent of soluble phosphoric acid.

Potash, by a sulphate of potash, (No. III), containing 65 per cent of sulphate of potash.

Nitrogen and Phosphoric Acid, by a mixture, (No. IV), containing in 100 parts, 40 parts of No. I, and 60 of No. II.

Phosphoric Acid and Potash, by a mixture, (No. V), containing equal parts of No. II and No. III.

Nitrogen and Potash, by a mixture, (No. VI), containing equal parts of No. I and No. III.

Nitrogen, Potash and Phosphoric Acid, by a mixture, (No. VII), containing in 100 parts about 70 parts of No. I, 16 parts of No. III, and 14 parts of No. II.

Lime by freshly slacked lime, (No. VIII).

Sulphate of Lime, by plaster, (No. IX).

Each of the above compounds, I to IX, was applied at the rate of 400 lbs. to the acre. For No. X, barn-yard manure was used, at the rate of 11 cords to the acre.

Below is a transcript of a portion of Dr. Alsop's private notes, showing the manner of conducting, and the results of the experiments.

RECORD OF EXPERIMENTS, ARAWANA FARM, 1876.

Very good soil. Light clayey loam, with gravelly subsoil. In grass seven years without any manuring. Plowed autumn of 1875. Cross-plowed April 28, 1876. Subsoiled one end, (no difference to be perceived in yield between subsoiled and non-subsoiled). Laid out in nine plots of twelve feet by one hundred and eighty-three feet—which equals about one-twentieth of an acre. Carefully sowed the plots with twenty pounds, equal to 400 pounds to the acre, of the fertilizing mixtures named—a separate mixture to each plot. The whole carefully harrowed with Howard flexible chain harrow—great care being taken not to mix the plots. Each ridged into four ridges by plow. The fourth ridge no account may be taken of, as the yield, planted in potatoes, was so poor as to render weighing and measuring useless.

May 23, two ridges in each plot sowed respectively, with Clarke's Long Orange Carrot, and Norbiton's Giant Beet, and on June 29th the remaining ridge in each plot sowed with Shamrock Turnip. Cultivated in ordinary manner. As far as could be judged by looks, those plots containing potash in fertilizers appeared the best, and those treated with lime and plaster, the poorest during the season. The beets were harvested Oct. 5th, carrots and turnips Nov. 16. Results as per table appended. The crops were measured and weighed carefully by myself, bushel by bushel, (except the barn-yard manure crops, which, being the field crops, were measured by bushel, and account kept of number of bushels), and the yield, by weighed bushel per acre, computed.

The barn-yard manure was bought, and cost—not taking account of labor, hauling, or spreading—*i. e.*, actual money paid for it, $4.37 per cord.

FERTILIZERS.	YIELD PER ACRE, IN BUSHELS. Crop—BEETS. Average weight of bushel, 48 lbs.	Crop—CARROTS. Average weight of bushel, 42 lbs.	Crop—SWEDES. Average weight of bushel, 50 lbs.	Cost of Fertilizer per acre. (Freight, cartage and labor of spreading not computed).
No. I.—Nitrogen	360	283	419¾	$12.10
No. II.—Phosphoric Acid	318	184	631½	13.00
No. III.—Potash	676¼	193½	629¼	12.00
No. IV.—Nitrogen and Phosphoric Acid	829⅜	361½	767	12.64
No. V.—Phosphoric Acid and Potash	704½	361	614½	12.50
No. VI.—Nitrogen and Potash	632½	316	632½	12.50
No. VII.—Nitrogen, Potash, and Phosphoric Acid	463¼	232⅜	716	10.55
No. VIII—Lime	201⅜	160⅜	567	
No. IX.—Plaster	202½	*215¼	575½	
No. X.—Barn-yard Manure, 11 Cords to Acre	†900	579	680	48.07

* Probably increased by being next below manured ground.
† Yield measured, not computed by weight, being field crops.

These figures will bear careful study. With the beets the largest crops were those fertilized with potash, plots III, IV, V. Without potash the yield was uniformly light; with potash it was large, except in VII. Here, however, the amount of potash applied was very small. If the beets had been the only crops raised, the experiment might have passed for a very good indication that potash was the lacking ingredient, and that the application of nitrogen and phosphoric acid would be of very little use on that soil. But the carrots and turnips tell a somewhat different story, doing the best with nitrogen and phosphoric acid together. The swedes seemed to be considerably benefited by potash also, much more so than by nitrogen, while the carrots do not seem to have been strikingly affected by either of the individual articles. The best crops came with phosphoric acid combined with nitrogen in IV, and with potash in V, but phosphoric acid alone proved inferior to both nitrogen and potash. Lime and plaster did but little good. Barn-yard manure proved, on the whole, the best fertilizer, though it was much the most costly and did not bring so large a yield of turnips as some of the chemical fertilizers. I confess that I can not explain the results with nitrogen, phosphoric acid, and potash. I should attribute the variations to uneveness in the composition of the soil, but considering the situation of the plants, the rows of beets, carrots and swedes being, in each of the individual cases, I, II, III, etc., side by side and close together, it seems a little strange that variations in the soil could affect the crops in such a manner. We might assume that the results are due to different ways the crops may have of making use of the plant-food offered them. We know that superphosphates are, in many places, considered almost a specific for turnips, and that beets are in many parts of Europe especially benefited by potash salts. But these are matters about which we have too little experimental evidence to decide with any degree of certainty.

The experiments described in the article last month and above teach, or rather illustrate, some very useful lessons. Both were made by intelligent, progressive, painstaking farmers, who went to work in a rational way to find which ones of the materials that their crops needed, their soils or themselves failed to furnish, and how best to supply them. The one obtained a very striking result the first year, which was confirmed by a succeeding crop. Phosphoric acid, the chief constituent of a majority of our commercial fertilizers, did scarcely any good, while nitrogen and potash proved very beneficial. The other obtains somewhat conflicting results the first year, though on the whole potash seems to be wanting. But to get an entirely reliable desision he will have to repeat the experiment at least once, and perhaps several times more. Still, it will be more profitable to do this, than to pay heavy prices for fertilizing materials that his soil can itself supply, or to lose his crops for want of those it can not furnish.

The fact is that if we are to have knowledge or any other good thing we need in this world, we have got to work for it. It was said to man long ago "In the sweat of thy brow shalt thou eat thy bread." For centuries manual labor was the chief, if not the only kind of toil that ordinary men needed to or could engage in with profit. But the time has come when all, farmers with the rest, must use their brains with their hands if they are to work economically, profitably, and happily. And in just such ways as these, by accurately studying their own soils and crops and stock and whatever else they have to do with in their farming, at the same time calling to their aid that definite knowledge, which is the result of the long and accurate experience of thousands of other more accurate and thorough experimenters, and whose results, rightly interpreted, we call science, and by applying it to their practice will their success be best assured.

I find that quite a number of the readers of these articles have planned experiments like the above this season. I should be very glad to learn the results and, if they will send me their addresses, I will try to see that they have some blanks for noting them, such as have been sent to the farmers who are experimenting with the fertilizers furnished by our Experiment Station.

The circular of directions and explanations which accompanied the fertilizers above referred to, contains the following:

"Attend to the work yourself. Don't trust it to the hired man. Watch the experiments closely. Note your observations. Make them both as accurate and complete as you can. The benefit will not be yours alone, but you will share with others the total good that will come from the combined work of all. With nearly fifty farmers engaged in this work this year, and perhaps more next year, we may hope for valuable results.

We hope you will be able to fill out the accompanying blank and return it to us when the experiments are done.

This undertaking is itself an experiment. Experience will doubtless show numerous ways in which the plans may be improved. But it is at least sound in principle. It will be a valuable lesson in agricultural chemistry to the experimenters, if nothing more, and we hope that by your earnest co-operation much good may come from the work."

W. O. ATWATER,
Wesleyan University, Middletown, Conn.

French Roofed Cottage Costing $2,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a genteel cottage adapted to thickly settled localities, where the increased value of lands make it necessary to reduce the area, and build upwards. Several houses constructed from these plans in this vicinity are admired for their convenient accommodation and cheerfulness....**Exterior,** (fig. 1.)—The foundation extends four feet above ground, giving a desirable altitute to the whole building. The front is en-

livened by the numerous window and door openings, the several projections of piazza, dormers, and cornices, and the variety of the materials used. The dressing of the several parts are of simple designs. The projections of cornices, etc., should always be self-sustaining, yet while this is true

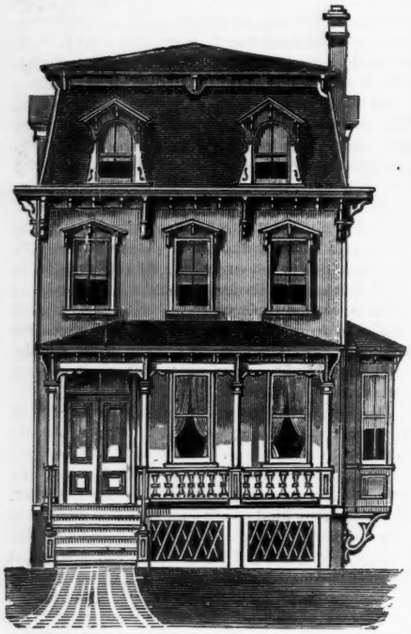


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

there is sure to be a fancied necessity for some apparent support obvious from the outside. Such supports require special treatment, with a view to their proper form and proportion, and should be sparingly applied, giving to each one its distinct place and purpose. Brackets of neat pattern are often crowded so closely together as to cheapen and destroy their beauty, and overload the cornice, thus reversing their legitimate purpose as supports.... **Cellar,** (fig. 2.)—Hight of ceiling 7 feet; it extends under the main house only. Its hight above

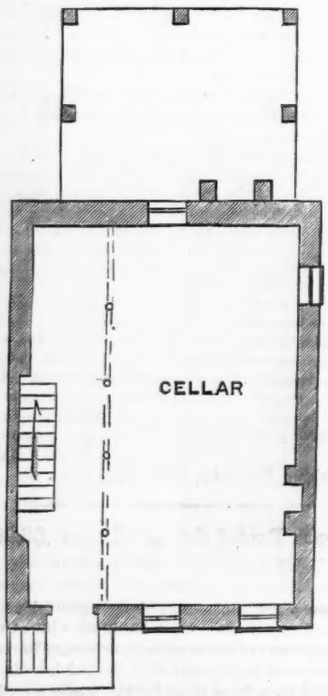


Fig. 2.—PLAN OF CELLAR.

the ground gives an opportunity for good sized window openings. If desired at any time, an airy and light work room or laundry can be made, by dividing and flooring a part of this story at little cost.... **First Story,** (fig. 3.)—Hight of ceiling 10 feet. It has a hall running the whole length of the main house, with entrances from both front and rear. The parlor, dining-room, and kitchen, are all good sized apartments, and pleasantly arranged. Double folding doors are provided for the front entrances and from the hall to the parlor, and sliding doors between the parlor and dining-room. A bay window adds materially to the room and pleasantness of the dining or living-room. Each room has an open fire place; the kitchen has a pump and sink, with the usual supply and waste-pipe connections. The rear stoop is roofed, and has a portable enclosure of light ceiling boards, to be used in severe weather.... **Second Story,** (fig. 4.)—Hight of ceiling 8½ feet. The divisions of this story are simple—giving a hall, two large chambers, with passage between, two hall rooms, and two closets. .... **Construction.**—The estimate below provides for foundation of broken stone, laid and neatly pointed with good mortar; the stone exposed to sight on the outside to be "semi-dressed." Bluestone or other suitable stone obtained most readily, are used for the sills of cellar windows, for the steps, and for coping of the cellar entrance. The principal timber is of seasoned spruce or pine, thoroughly framed, raised, and secured. The "framing-in" of braces is too frequently omitted—cutting them "barefoot," and spiking, being substituted. The latter does very well where the frame is strongly sheathed over, and the outer siding applied afterwards. The sheathing aids largely in stiffening the frame, but should not be relied on to the exclusion of the necessary braces to square up the frame, and prevent the swaying which often happens unobserved, to be discovered when too late to remedy it. Laxity in the matter of bracing has lead to frequent errors as to their proper place in the frame. When framed in they are invariably placed in the *upper angles* under the ties and plates, adjoining the posts, and when barefoot they should be put in the same angles; never, as is frequently done for convenience, in the lower angles, nor on the sills. A moment's reflection will convince any one that *if the right angles along the principal frame are rigidly maintained, displacements will never occur,* except, as rarely happens, the whole is bodily raised from the foundation by a hurricane. The most *reliable* angles are those formed by the tie and post connections, because at these points the posts are tenoned and mortised together, and secured with hard wood pins. Those least reliable are at the foot of the posts, adjoining the sills, where their connections are secured only by the weight of the upper frame. Braces placed in the latter angles serve only as fulcrums to endanger the frames when tested by ordinary winds; but if the former or *upper* angles are made positive, by having substantial braces in them, the severest gales may be defied. The siding is of narrow, clear pine clapboards, laid on "thicknessed" sheathing. The Mansard part of the main roof is covered with 8x16 inch slate—the piazza, bay window, kitchen, stoop, cornices, window, and deck roof with I. C. charcoal tin—all laid on hemlock boards. Tarred felting is spread under all siding, and slate. The first and second stories are fully completed inside; the attic is floored, but otherwise unfinished, but may be divided at any time into rooms as shown for the second story (fig. 4.) The interior plastering is three-coat work, on seasoned lath. All sash are four lights and hung to balance weights. Blinds are properly hung (outside) to each window. All wood, tin, and brick work, usually painted, has two coats of best lead and oil paint, with stainers to suit the owner's taste. The choice of colors for the exterior is frequently canvassed during the construction of these buildings; often some person of *taste* (?) decides by "warming"—adding red and yellow, until, by the preponderance of these stainers, the most sombre and dismal colors are produced. The most appropriate and pleasing shade for the body of this class of house, is a *light gray;* for the trimmings, *dark gray;* for the sash, *burnt sienna;* for the blinds, *green.* The tin roofing should match the *slate* in color. Red colors should be sparingly used, or omitted altogether.

Estimate of materials required—and total cost:

50 yards excavation at 25 cents per yard			$12.50
975 feet of stone-foundation, at 8c. per foot			78.00
45 ft. blue-stone sills, steps and coping, at 30c. per ft.			13.50
4000 bricks, furnished and laid, at $12 per M			48.00
480 yards plastering, at 30 cents per yard			144.00
Cornices and centers, stucco			30.00
4000 feet of timber, at $17½ per M			70.00
2 sills, 4x8 in. 29 feet long.	2 posts, 4x6 in. 13 feet long.		
2 sills, 4x8 in. 21 feet long.	30 beams, 3x8 in. 21 feet long.		
1 sill, 4x8 in. 16 feet long.	15 beams, 3x7 in. 21 feet long.		
2 sills, 4x8 in. 13 feet long.	7 beams, 3x8 in. 16 feet long.		
1 girt, 4x8 in. 29 feet long.	2 decks, 3x8 in. 18 feet long.		
6 posts, 4x7 in. 22 feet long.	2 decks, 3x8 in. 26 feet long.		
6 ties, 4x6 in. 29 feet long.	1 cross tie, 3x8 in. 18 feet long.		
6 ties, 4x6 in. 21 feet long.	4 hips, 3x7 in. 14 feet long.		
2 plates, 4x6 in. 13 feet long.	2 piazzas, 3x7 in. 19 feet long.		
1 plate, 4x6 in. 16 feet long.	2 piazzas, 3x7 in. 18 feet long.		
325 wall strips, at 12 cents each			39.00
75 joists, at 16 cents each			12.00

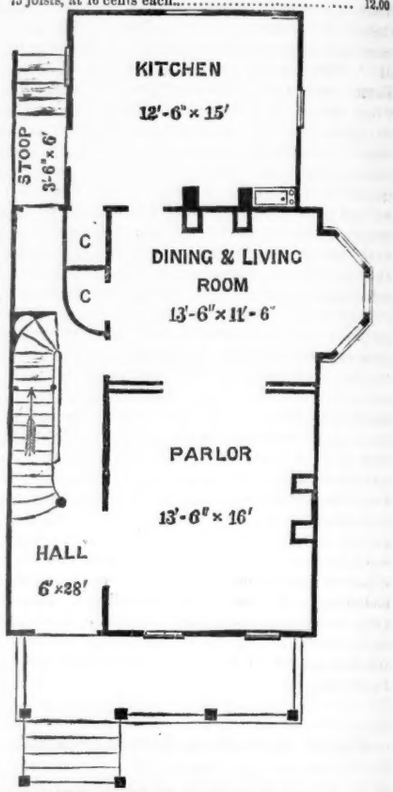


Fig. 3.—PLAN OF FIRST FLOOR.

210 hemlock boards, at 12 cents each	25.20
cornice materials	60.00
215 sheathing, at 16 cents each	34.40
560 pine siding, at 12 cents each	67.20
8 squares slate at $8½ per square	68.00
13 squares tin at $7½ per square	97.50
65 feet leaders at 10 cents per foot	6.50
260 flooring, at 18 cents each	46.80

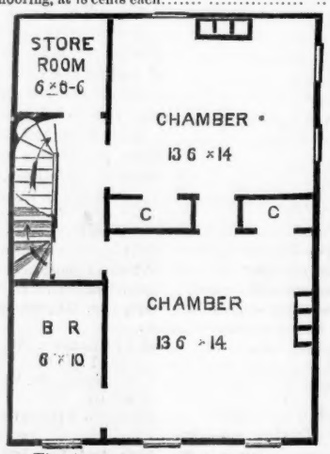
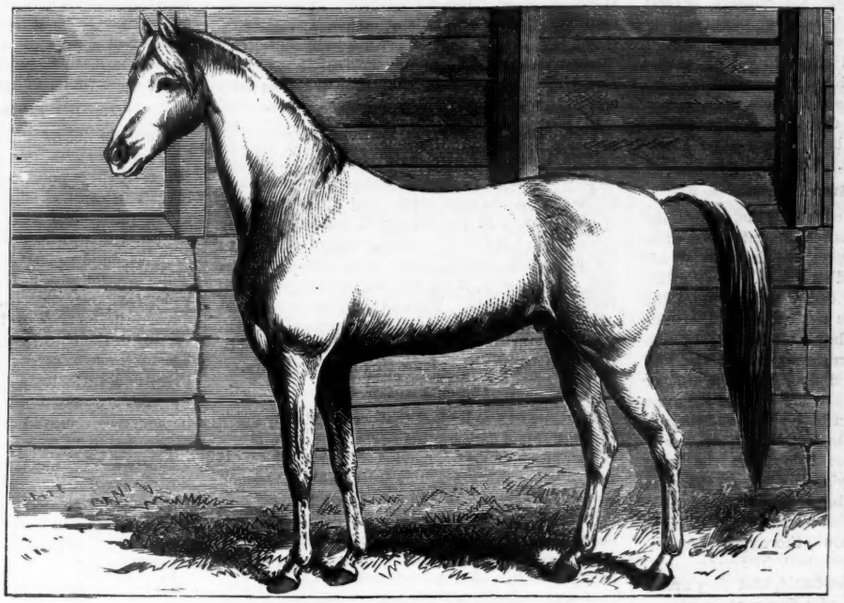


Fig. 4.—PLAN OF SECOND FLOOR.

Piazza, and stoop, complete, $80 and $28	108.00
4 cellar windows, complete, at $4 each	16.00
5 plain windows, complete, at $12 each	60.00
6 plain windows, complete, at $10 each	60.00
1 bay window	60.00
5 dormer windows, complete, at $16 each	80.00
13 doors, complete, at $10 each	130.00
1 area door $5; stairs, $90	95.00
Closets, pumpand sink	50.00
Mantles, $32.00....Tarred Felting $10.00	62.00
Carpenter's labor, not included above	110.00
Carting, average 1 mile	45.00
Painting, $130.00; Incidentals, $141.40	271.40
Total Cost, complete	$2,000.00

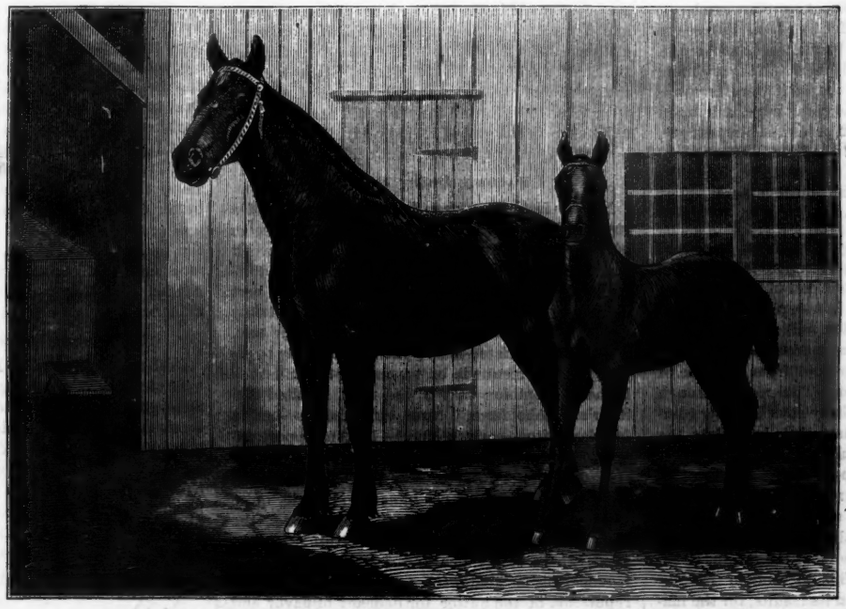
The Jenifer Arabian—Cross of Arabian and Percheron.

We give on this page a portrait of a pure bred Arabian stallion, known as the Jenifer Arabian. This horse was imported from Egypt in 1872, by Colonel Jenifer, who purchased the animal at Ismalia, in the desert between Cairo and Suez. The fact of the purchase and exportation of the horse, is vouched for by Col. F. G. Skinner, formerly one of the editors of "Turf, Field and Farm," and now of the "Rod and Gun," who was present at the purchase, and witnessed a trial of the horse when ridden by Col. Jenifer, when it succeeded in beating a field of the best Arab horses in Egypt. The difficulty in procuring these horses is in the prohibition of their export by the Egyptian Government, whose permission to send a horse out of the country must first be obtained. This horse, on its arrival in this country, was inspected and admired by several well known horsemen. It is of the same blood as the best animals in the racing stud of the Khedive of Egypt. The horse is white in color, with silver mane and tail, is now 11 years old, is 60 inches high, and has a perfect pedigree. His original name was Ismael Pacha, which was changed on his arrival in this country to that given above. His present owner is Colin Cameron, Manager of Elizabeth Stock Farms, Brickersville, Lancaster Co., Pa. The present reputation of the horse is very high. His disposition is gentle and docile, a lady can handle him with ease, either in single or double harness, or under the saddle; he is at the same time fearless, and is not startled by locomotives or other unusual objects, thus exhibiting the traditional character of the breed. He has taken first premiums every year since his importation, and has been a very successful breeder. One of his colts, at 2 years old, measured 15 hands and 1 inch, and all of them are noted for the size of bone and muscle. No breed of horses is so useful in improving other races, as the Arabian. Nearly all, if not all, the good qualities of the various races of horses now in existence, are derived from the Arab. The Hungarian horses, noted for bottom and endurance, are of Arab descent; the Russian Orloff, a famed trotting race, has the same lineage; the French Percheron derives his fine bone, his symmetry, his soundness of constitution and his capacity for hard work, from the Arab; the English racer, known throughout the world as the fastest horse in existence, and our own native running and trotting breeds, inherit their most valuable points from their Arab ancestry. Even the French-Canadian, the undoubted source from whence sprang our useful Morgan horses, looks back to the same origin. The Arab is well fitted by the necessities of his position, the work he has to perform, and his manner of subsistence, to thus become the general improver of horses everywhere. The conditions of the life of his owner are such as to demand, in this horse, endurance and speed, and the Arabian has been for centuries bred with a view to the development of these, which he possesses to a degree unattained by any other known breed in the world.



ARABIAN STALLION, OWNED BY COLIN CAMERON, LANCASTER CO., PA.

For a horse for the general uses of the road or the farm, the nearer we can approach the union of the thorough-bred, with mares of the larger classes, the nearer we approach a perfect work horse. There are uses for which the heaviest class of horses are found to be the best, but these are the exceptions and not the rule. A medium sized horse, springing from, say the Percheron, or some other heavy race, on the one side, and the thorough-bred on the other, should combine all the excellent points to make it valuable as a working animal, except for rapid work. We are enabled to give here an example of such a cross, by the kindness of Mr. J. J. Parker, to whom we are indebted for a photograph of his pure bred Percheron mare, "Rosa Bonheur," with her colt "Arabian Boy," by the Jenifer Arabian. A copy of this photograph is given in the engraving on this page. The colt was six months old when photographed, and possesses the fine, round, bold form of the Percheron, with the good action of the Arabian. Mr. Parker has raised other colts of this cross, and exhibited three of them at the Centennial, where we fortunately had an opportunity of inspecting them, and of observing the excellence and promise of the cross. The Board of Managers of the Centennial were so favorably impressed with these cross bred colts that, although by the rules of the exhibition such animals were excluded from competition, a separate class was made especially for them, and not only was a special award made for them, but a complimentary notice was given to Mr. Parker, for his laudable enterprise in originating the cross and thus proving its value. Mr. Parker deserves the credit of having been one of the first to introduce the Percherons into Pennsylvania, and several years ago the *American Agriculturist* took occasion to compliment him upon his success in introducing stock of the highest character. Since then he has made other visits to France, and has selected with great care many fine specimens of the Percheron breed for importation to this country. In some respects, our breeders have not exercised sufficient care in making selections, neglecting the chief point of value in these horses, viz., their adherence to the Arab type, and their possession of the fine bone and symmetrical build of their ancestral race. In consequence, we have taken occasion to warn importers of their mistake in this respect, and of the danger of injuring the credit of an excellent breed, by bringing in animals of impure blood, or selected more for gigantic size of carcass and limb, and for excessive weight, than for the more valuable points of sound constitution, symmetrical form, and activity of movement. In noticing such errors of judgment, we had no reference to the importations of Mr. Parker, which have been highly creditable to him, and of great service to the agricultural interest of his State and neighborhood. His recent enterprise, of establishing the value of the cross of the Arab, or thorough-bred, on the Percheron, will confer another obligation upon farmers and horse-breeders, and will undoubtedly tend to advance in value the higher bred types of the true Percherons. After all, it is only the high bred animals of this or other breeds, that are worth using in breeding, as it is only from these that we can look for satisfactiory results in the progeny.



PERCHERON MARE AND ARABIAN-PERCHERON FOAL, OWNED BY J. J. PARKER.

Among the Farmers.—No. 17.

BY ONE OF THEM.

The Mt. Lebanon Shakers.

I have been repeatedly at New Lebanon, N. Y., but until a few weeks ago never went among that peculiar band of religionists, the Shakers, several "families" of whom are grouped picturesquely upon the side of the mountain above and east of the village. It is a good climb to get up to the "North Family," and the hill still towers above, and offers one boon to these good farmers, namely, running water in abundance, delivered in pipes at every floor of the house or barn, or any other building, wherever it is needed. This family has

A Famous Stone Barn,

which is 296 feet long, 50 or more wide, and at one end five stories high. It has been repeatedly described in the agricultural papers, and is really an admirably built and arranged structure. I do not like stone barns, and have no doubt that at times the moisture settles upon the inner sides of the walls in a way sure to damage hay which comes in contact with them. The barn stands end to the hill, and a double drive-way and floor allows a number of loads of hay or grain to be driven in at the same time. Deep bays are upon both sides, and there is storage room for a great amount of hay, straw, and corn-fodder. On the floor below, are the grain rooms and shoots for carrying hay to the cattle, and grain and feed to the mixing troughs on the cattle floor. This, the third floor descending, is high, well furnished with windows, thoroughly ventilated, and exceedingly convenient in arrangement. Stanchions are used for the cattle, and they are so constructed that sections of a dozen or more may be moved at once. The cows are admitted, and as they put their heads into the mangers for their feed, they are all locked in by one effort. This is not a very unusual contrivance, but after milking is over, and the cows are to be left to themselves, common "tie-chains" are put about their necks, and the stanchions are unfastened, which gives the animals much more liberty. This is a humane plan, at any rate, and as such worthy of imitation.

The floor at the rear of the stalls is a very broad, shallow gutter, sloping so as to conduct the liquids to conduits, which discharge them upon the compost heap. Hay, as I said, comes down by shoots from the floor above; each shoot supplies two head, but each cow has her own feeding-box. These are of cast iron, hold about a bushel each, and are in form like quarters of a hemisphere. They are hung upon pins or pivots, which are, as it were, continuations of the strait perpendicular edge, and upon these they may be swung in or out of the manger, swinging exactly through a quadrant. When empty, they are drawn through the partition, are filled from the feeding floor, and pushed back.

Management of the Manure.

There is a little tramway, with light cars, that can be easily shoved by a man upon the floor behind the cattle stalls. At one end of the building, this tramway is continued in a semicircle through a room shut off by a partition wall and doors from the rest of the barn, and is so arranged that a car may, if necessary, be run around from one side of the cow floor to the other. The room through which this semicircular railway runs is a big compost factory. The cars dump their loads into the gulf beneath; muck is hauled in upon the upper floor, and by means of a trap-door, dropped through upon the mass, all sorts of refuse material, suitable for the purpose, are added, and the heap is leveled and worked over occasionally so as to give homogeneousness to it, while doors at the ground level afford access to carts. This method of making manure must be excellent in its results, for the material can be worked over, kept moist or dry, mixed with absorbents—as muck, leaves, litter, etc., and the fermentation perfectly controlled by water.

The Cattle, Grade Short-horns,

for the most part, looked very well. It was about noon when we were there, and almost all were in the yards. Among the older cows there was great diversity, yet most showed strong evidence of Short-horn blood, while the young stock exhibited the characteristics of their thorough-bred sire in a marked degree. I have rarely seen a better lot of young things, or better growth for their age. Those in one yard were from five months to near a year old—no more, for though I judged them to be considerably older, "Elder Frederick" gave such an emphatic "nay" to the suggestion, twice made, that I gave up the right of private judgment. The Shakers are good feeders—all their cattle were well fed, clean, comfortable, and healthy. The barn was very sweet, cleanly, and in perfect order.

The Shakers as Economists.

They economise in certain kinds of labor, but clearly take a great deal of unnecessary pains and useless steps. As economists, they are astonishingly extravagant in the matter of buildings. They probably live at a very small expenditure of money; but of certain kinds of labor they have a surplus, and make use of it in erecting buildings, and in taking care of them. With a very little curtailment of comfort, buildings of half the aggregate dimensions, would answer their necessities, and save time and labor now given to much drudgery.

Other Families.

Our time was so limited that we could only hurry through some of the other barns, where we saw a similar stock of cattle, managed in much the same way. The manure was not kept under cover and composted as at the big barn, but thrown out, mixed with straw and litter, and composted in a measure in the yards. I am not altogether certain that there may not be a saving of labor and ease in management secured by this less philosophic process, which makes it desirable. Perfection is hard to reach in any sort of thing, and as a rule it does not pay to attempt it in the coarser operations of farming. The real desideratum is the nearest approach to it consistent with economy of labor and peace of mind. Various simple manufactures, for example, chair making, are conducted independently of the farming, gardening, herb raising and drying, and similar operations, but in these outside employments, the laborers are "world's people."

The Shakers are good farmers, as judged by their land, their stock, their buildings, and one sees many quaint practical devices, some of which would have been worth making special note of. They are very systematic in these little labor-saving matters, and I recalled with a smile the half humorous statement of Charles Nordhoff in his "Communistic Societies of the United States," to the effect that both indoors and out their ways and devices were those to be looked for where old bachelors and old maids are associated in every day life,—for Shakers are rigorous and consistent celibates.

Factory Dairy Butter.

Not far from a year ago I wrote an account of a visit to Farmington, Conn., and about the success of the butter dairy established there. I believe it is an acknowledged fact that the "creamery" butter, taking the year through, is better than the best previously made in the farmers' families; certainly it brings a higher price, and meets a readier sale. The question arises—is not this then the way to secure the best results in butter making? I must say I had the opinion that it was, until I visited Mr. Starr's "Echo farm," barns, and dairies—and a few days after—early in March—had the opportunity of examining some samples of butter from Locust Grove, the farm of Mr. Wm. B. Dinsmore. There is a precision of cleanliness and purity quite possible about the stables and the feeding, the dairy, and the butter making of a private establishment, where stable-men and dairy-folks all feel a personal responsibility for, as well as pride in, the reputation of the butter for delicacy of flavor and all other excellence. When thirty or even ten farmers bring their milk to the "creamery," it is improbable, if not impossible, that any such cleanliness should prevail without an exception.

Whatever Affects the Milk Affects the Butter.

The quantity, as well as the quality, of the food produces immediate variation. We were rejoicing over the excellence of our winter butter a few weeks ago, when suddenly its quality fell off from no known cause; finally it was found out that the man who fed the cows had been practicing unusually rigid economy in feeding, and as a result the cows were half starved. They fell off in milk, and the quality of the butter was at once affected, as shown particularly in a lack of flavor. A change was soon after instituted in our domestic arrangements, and during the inter-regnum, I milked the cows myself, night and morning. This afforded me an opportunity of testing the value of the

Channel Island Milking Can.

I brought one of these out with me at the last trip, together with the straining cloths and shells, which are there universally used with them in milking. This can was minutely described in February of last year, but I have never been able to induce the hired man, who milked, to use it. Now, however, as my own servant and master, I took the globular ewer with its flaring top, not over 8 inches wide, tied over this the strainer-cloth, pressed it down into the neck of the can, laid the shell into the sag of the cloth, and found no difficulty at all. The milk may spatter a little at first, but as soon as there is a little foam this ceases. By this means the milk is strained just as fast as it is drawn, and immediately removed from the contaminating air of the stable, as well as from all those specks of manure, dandruff, and hair, which so frequently, if not always, fall into the milk drawn into the ordinary pails. I became really attached to the system, and am happy in finding that the new man takes kindly to it, and that it seems as easy for him to "get the hang" of it as of any other new pail. The milk is of course strained and treated as before.

What do we Strain Out of Milk?

I had the opportunity recently of examining, under the microscope, certain minute brownish particles which were removed from milk by cloth strainers, after it had been strained in the usual way through wire gauze. These brown particles were determined by our village doctor, a man of no mean attainments in his profession, to be of "*pavement epithelium*," which must have come from the interior of the udder. The straining cloth was double, and a good many of these particles were arrested by the second fold. In addition to these epithelial scales, there were multitudes of very minute hairs, so small that they were hardly visible except as a downy dust, to the naked eye. Now it is certain that the presence of epithelium in milk is a great incitement to change, and it may be to changes unfavorable to high flavor in the butter. One, to whom I spoke about this, sees in these impurities important aids to digestion, and thinks he would be actually "flying in the face of a beneficent Providence," to strain them out. This is only another argument in favor of the view that factory butter can not really compete with that which is produced in the very best private dairies. Straining the milk as it is drawn, without question, separates many of these particles, as well as of the fine hairs, at the outset from the milk, so that their influence for good or ill is of but short duration.

Care Needed in Shipping Horses.

I called in at Stoddart's Bonded Stables, in Greenwich street, a few days ago, and there found the finest young Clydesdale stallion I ever saw. He was brought out upon the Ethiopia, and had been recently landed. The groom in charge, James Melvin, has made six trips with horses across the Atlantic, and has probably brought out the best Clydesdales that have ever come to this country. He started with three nearly uniformly good horses, consigned to John Cochrane, of Goodland, Ind., and this is the only one that survived the voyage. Melvin has never before lost a horse. These were young—this one being three years old, though weighing 1,900 pounds. They were put on board after being led 16 to 20 miles each, without rest and without food, nervous, high strung colts, carrying all or nearly all the flesh they could be loaded with. They were swung from the wharf, high up into the rigging of the steamer, and then lowered into the between-decks. The ship was soon under way, and the roll-

ing and pitching, though not extreme, were enough to keep them in a constant condition of intense nervous excitement day after day. The two which died ate nothing. One soon developed pneumonia, which ran its regular course rapidly. The other, Melvin describes as dying from nervous excitement and exhaustion. He was really scared to death. Weakened and exhausted from a journey of 20 miles, when he probably had never traveled more than three at a time in his life, he could hardly stand when brought to the ship. He was so nervous when taken on board, that he "trembled like a leaf, and sweat like a river," the perspiration continuing for several days. Meanwhile, his exhausted vitality could not throw off the cold which he took, and so it also ran into lung fever and he died. The horse which survived had no doubt a better constitution, a less nervous temperament, and greater intelligence, so he did well, although he suffered nearly the same treatment, arriving at the ship's side after a 16 mile walk, "free and blythe as a bird." A great temptation is offered to shippers of live stock to curtail expenses to the last extent. Two or three or, better, four days rest and feeding, after their long walk to Glasgow, would no doubt have put them in such trim that they might all have been landed in New York.

This is an extreme case, the shipper being terribly punished for his parsimony, for his loss on the horses is hardly less than $1,800 to $2,000 each. Nevertheless, smaller, though similar, losses are constantly occurring in this country from the same cause. Horses should never be over fat when started upon long journeys, and as a nervous animal is always much wrought upon by the incidents and surroundings of a journey by rail or by steamer, it is always best for him to begin the trip after a good rest, and after having for a day or two had good care and liberal feeding.

Talks on Farm Crops.—No. 4.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"The question is," said I, "will it be better to plant it to corn, corn-fodder, beans, or patatoes?"

We were talking about an old pasture lot that the Deacon wants me to break up. I cannot spare the pasture until the first or second week in June; or if I could, we should not be able to spare the teams to plow it until we were through our regular planting. Mangel wurzels or turnips are out of the question, as they will not do well on sod-land, unless plowed the previous summer or autumn.

It might bring a fair crop of some early kind of potatoes, such as Early Rose, or Early Vermont, or even Late Rose. It would depend a good deal on the season, and on the "bugs," and on the condition of the land. If it worked up mellow and moist, the chances would be favorable for a crop. But if the land turned up dry and hard, I should hesitate some time before putting in good potatoes worth $1.50 a bushel—and it would certainly be no use to plant small, withered-up seed on such land, so late.

"That land," said the Deacon, "if plowed with a jointer, would work up as mellow as a garden."

—"If so," said I, "then some early variety of potatoes might turn out a big crop, even if not planted before the middle of June."

I have no faith in planting corn after the first week in June. I would rather drill in corn for fodder.

"That is so," said the Deacon; "I would drill it in as we do wheat, and cut it with a reaper."

"Not I. There is not one crop in ten so treated that does well. The crop is yellow and sickly, and burns up just when it ought to be growing most vigorously. I would drill in the crop with a wheat drill, but I would make the rows 28 or 35 inches apart. I like to sow 3 bushels of seed per acre, and as the drill will not sow this much at 28 or 35 inches apart, we put three of the rubber tubes into one coulter. That is, we deposit the seed of three rows in one row. This makes it thick enough."

"Better let them all run," said the Deacon, "and cover the whole ground."

"How any man," said I, "can say so, or think so, is one of the mysteries of human nature. I do not know a single good point in favor of the plan."

It is no trouble to drill in the corn in rows 2½ to 3 feet apart. No hand-hoeing is required. But you must use the horse-hoe freely and frequently between the rows. The crop can be cut with a good reaper, and the land will be left clean and mellow.

In regard to beans, if I thought they would bring as high a price next year as they do now, I should be tempted to put in several acres. But it is not wise, as a rule, to put in a crop out of your ordinary rotation, simply because it brought a high price the year before. Beans have been in the past, and will be in the future, a very profitable crop on good, clean land, with good care and treatment.

It is a great mistake to suppose that any land is good enough to raise white beans. It is a still greater mistake to suppose that beans do not impoverish the soil. Beans, peas, and clover, are all leguminous plants—all contain a high percentage of nitrogen, and all have the power of gathering up nitrogen from a soil comparatively poor in it. But if the nitrogen is not in the soil, you need not expect a good crop of beans, peas, or clover.

It is your good farmer who gets good crops of clover, peas, and beans. And he gets them because he *is* a good farmer, or has good land. It is not the growth of the clover, peas, or beans, that makes the land rich.

"I don't see what you are driving at," said the Deacon, "though it is a fact that the men who have the best success in raising beans, are the men that are what you call good farmers—men who have good land and keep the soil in good heart."

"The idea I am endeavoring to enforce is this, beans are, taking one year with another, a profitable crop on a well-managed farm. I do not say profitable on rich land, or on land that has been manured. Beans are not a crop that specially needs manure, or that specially needs rich land. And yet they are seldom a profitable crop on any farm that is poorly managed or badly cultivated. Pigs and poultry are sometimes called the scavengers of the farm—they pick up what would otherwise be wasted. On a farm where much grain is fed to horses and cattle, a certain number of pigs and poultry can be cheaply kept. But there are farms where pigs would find it hard work to pick up a living.

Now beans, peas, and clover, are the vegetable scavengers of the farm. They can pick up a living on a liberally treated farm. And on such a farm the bean crop is, other things being favorable, usually quite a profitable crop. But on a run-down poverty-stricken farm, beans would fare as poorly in the field as the pigs and poultry in the barn-yard.

There are thousands of acres of beans raised in this county and the county adjoining. On many farms it is the principal crop. And not a few farmers have grown rich in the business. Every few years the beans are high, we hear of this man and that man who sold their crop of beans for so many thousand dollars. What wonder that such a man as myself, thinking how pleasant it would be to have one or two thousand dollars, should be tempted to put in a dozen or more acres of beans.

I have known many farmers act in this way. But I have rarely known one that met with any decided success. I have known them to raise a good crop, but the price was low and they gave up the business in disgust; or if the price was high, the crop was poor, or it was damaged in harvesting.

The conclusion of the whole matter then, is this: If you are a good farmer, or have made up your mind to be a good farmer, and have determined to work your land thoroughly and treat it liberally, and you want to raise beans, then go into the business moderately and stick to it. There is money in beans. And the crop has many advantages. It can be planted after we are through with all other spring crops. It is planted in rows wide enough apart to admit the use of the horse hoe, and the land can be kept clean. It is, too, as I have said before, a crop that will pick up its own living—if there is anything to pick up.

It is not a crop that requires, either in planting, cultivating, or harvesting, a great amount of labor; and what is equally important, the work required has not to be done when other work is pressing. Pulling the beans is the heaviest item of labor—but it is usually done after wheat and barley harvest, and before corn must be cut or potatoes dug.

And last, but not least, bean vines, if saved in good condition, make excellent fodder for sheep and cows. A good crop of beans will enable you to keep more sheep and make more manure; and if you get a good crop, and they bring a good price, you have a nice addition to the receipts of the farm.

Beans do well on sandy land provided it is rich enough; and they do well, and sometimes better on a clay loam, provided it is well drained and turns up mellow and moist, so that the drill will deposit the seed in good, deep, warm earth. In such soil, they are soon up and you can start the horse hoe.

"But do not cultivate," said the Deacon, "when wet with dew or rain, or the leaves will rust."

"Perhaps so," said I, "but at any rate cultivate, and cultivate repeatedly and thoroughly and use the hoe if necessary." Many bean fields are disgracefully weedy and a reflection on our common sense. The extra labor of pulling beans among the weeds would more than suffice to kill the weeds when young—and the yield would be far greater and the quality better.

We usually plant on clover sod, the first or second week in June. The bean planters in common use here make the rows 2 ft. 5 inches apart, and drop the beans in hills a foot or fifteen inches apart.

"Many farmers," said the Deacon, "sow with a grain drill, in rows 28 or 35 inches apart, dropping a bean every two or three inches in the row."

"Yes," said I, "and some farmers who have tried both plans tell me that they get a better yield in this way, than when four or five plants are grown together in one hill a foot or fifteen inches apart. But if the crop is likely to require much hoeing, it is better to plant in hills, as you can pull the hoe between hills and kill the weeds."

"If you plant on a good clover sod," said the Deacon, "or on an old pasture, and use a jointer plow that completely covers the grass, you will rarely need to hoe much."

There is some truth in this, but all I have to say is, make up your mind to hoe if necessary. It may make all the difference between success and failure.

Drenching Horns for Cattle.

Very frequently, a grave disorder among domestic animals, may be averted by the timely administration of a simple medicine. Cows, especially, are subject to many serious diseases, which, though very troublesome when fully developed, are easily prevented, or cured, by instant attention on the appearance of the first symptoms. Diseases of the digestive organs, if neglected at first, rapidly develop into affections of the blood, which, becoming poisoned or disorganized, interrupts the vital functions, and the animal often dies before its real condition is suspected. A brisk aperient, consisting of Epsom or Glauber salts, given at the first appearance of almost any disorder, will nearly always relieve the animal and prevent further mischief. Hence no farmer should be without a supply of one or the other of these useful medicines, and the means of administering a dose dissolved in water. The drenching horns, shown in the engravings on the next page, will be found well adapted to this purpose. The ordinary vehicle for giving an animal a dose of physic, the long-necked wine-bottle, is a very dangerous one, and should never be used. There is a strong probability, whenever this is used, that the neck may be broken off by the struggles of the animal, and swallowed, or fragments of glass may pass into the throat or wind-pipe, causing fatal lacerations or instant suffocation. The tin or copper horn, shown in figure 2, is a perfectly safe instrument for this purpose. The engraving has purposely been made large, that it can be used by any tinman or coppersmith as a pattern for making one. Its width in the broadest part may be six inches; the bottom may be an oval, six inches in the longer diameter, and three in the smaller; the whole length of the horn may be 10 to 12 inches, in order to hold about two quarts. A

ring is fastened to the bottom, upon one side, by which it may be hung up when not in use. When used, the liquid is poured into the horn by means of a funnel, the small end of the horn is inserted into the mouth of the animal between the jaws, where there are no teeth, and the head being held up, the medicine trickles or gurgles out of the horn down the animals throat so slowly, that it can be easily swallowed. A very good and cheap substitute is represented in figure 1. It is made of a

Fig. 1.—A DRENCHING HORN.

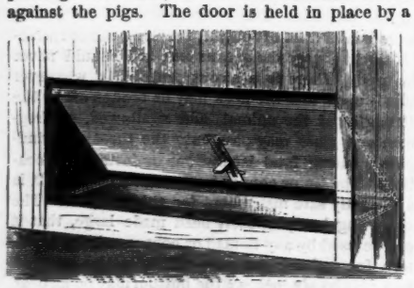
large common horn, the small end of which is sawn off at the proper place, and, if found necessary, is bored to make the aperture large enough. The large end of the horn is closed with a piece of wood,

Fig. 2.—A DRENCHING HORN OF METAL.

neatly fitted and secured by a few small screws; or it may be covered with a piece of sheet copper, the edges of which are turned up around the horn and secured by screws. For cement, a little bath-brick dust, mixed with melted rosin, and a few drops of linseed oil, may be used hot. A hole should be bored in the bottom, to be closed with a plug when the horn is filled, and removed when it has been properly placed in the animal's mouth, if found necessary to allow the liquid to flow more freely.

A Swinging Door for a Piggery.

"H. S. S.," of Iowa City, Iowa, sends the accompanying illustration of a swinging door for a piggery, which is intended to be used together with a feed trough. The engraving is intended to show a portion of the front wall, or partition of the pen. The door is hung upon hickory pins set into the frame, one upon each side, and may be swung back as shown, so as to permit access to the trough for pouring food into it, and at the same time closes it against the pigs. The door is held in place by a

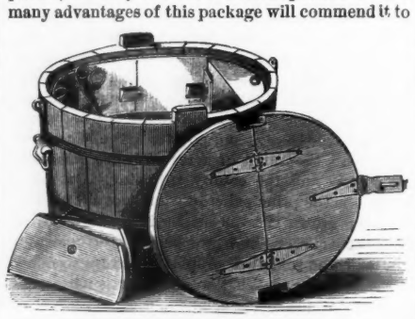


A SWINGING DOOR FOR A PIGGERY.

bolt sliding in a slot, when in either position, as shown in the engraving. In a piggery, the pens would be most conveniently arranged on each side of a passage way, with feed troughs opening into the passage by doors of the style here described.

An Improved Package for Butter.

The demand for choice butter, put up in cakes ready for use, and the production of such butter to meet this demand, have so greatly increased, that there is a wide inquiry for the best methods of packing the butter for sale, and the best kinds of packages. Several kinds of packages, suitable for shipping choice butter, have been described from time to time in the *American Agriculturist*, but in these, as in other things, improvements are always being made. When at the Centennial Exhibition we noticed something new in the way of butter packages, which we here describe, it being the time when the business of shipping butter is beginning for the season. This package was exhibited by Mr. J. G. Koehler, of 503 North Second St., Philadelphia, who is well known as a manufacturer of cedar-ware, and whose tubs and vats, of enormous size and capacity, were so conspicuous at the Exhibition. The butter-tub in question, is oval in shape, made of seasoned white cedar, and therefore inodorous, is strongly bound with galvanized iron bands, or brass hoops, and is well adapted for resisting rough treatment in use. The shape of the tub is shown in the accompanying engraving. Within the tub is a tin cooler, having a removable ice chamber at each end, (also shown in the engraving). These movable chambers are a great improvement on the old style of fixed ones, as they can be filled with ice or emptied of water with far greater ease and convenience. A series of ledges is made upon the inner side of the cooler, by which wooden shelves for holding the butter are supported. These shelves are made in two parts, as shown resting against the tub, and are perforated, both for facility in moving them, and to allow the circulation of air within the tub, to equalize the temperature. The prints are laid upon these shelves. When rolls are packed the shelves are not used. The cover is hinged in the middle, as shown, and has a fastening at one end, and a hinged hasp at the other, so that it is easily removed or placed, and may be locked for transportation. The many advantages of this package will commend it to



A TUB FOR PACKING BUTTER.

those of our readers who are engaged in shipping or taking to customers choice butter in rolls or prints.

MATURITY OF BEEF CATTLE.—If we compare the rate of growth of well bred and well fed animals, from their birth up to the age when they are generally supposed to be mature, it will be found that the most rapid increase is made at from 2 to 3 years. This is now the age at which there is most profit to the feeder. After that time the growth is not only slower in proportion, but consists chiefly of fat instead of flesh. Our best stock now reaches full maturity soon after arriving at the age of 3 years, if skillfully fed. If fed improperly, the period of ripeness may be postponed a year or more, or the animal may never reach the weight and condition which it might otherwise have done. It is not to be understood that we refer only to the present most popular breed, the Short-horn. Any of the pure breeds of beef cattle, the Herefords, Devons, or Black-polled Scotch, are all subject to the same rule; and not only is it true with beef cattle, but in a corresponding ratio with sheep and swine as well. A wether should come to market at less than two years old, and pork is most cheaply made by feeding grades, of any of the pure breeds, for one year only. No pork can be more profitably fed than that of a well bred hog of 250 to 300 pounds of one year old or less.

A Handy Frame for Sawing Wood.

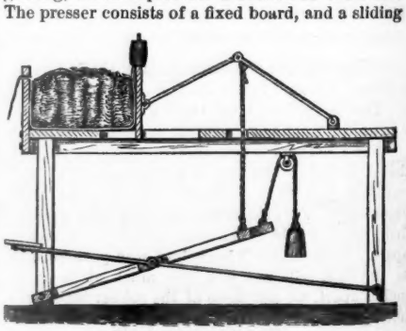
G. McAdam, of Egmondville, Canada, sends a draft of a very handy sawing fame, contrived by Mr. Jos. Stevenson, Egmondville. This frame has,

A FRAME FOR SAWING WOOD.

in this locality, altogether superseded the buck saw. With one of Boynton's cross-cut saws, there is no trouble to cut cord wood; the end where the saw is inserted in the pendulum should work in a slide. The accompanying engraving very clearly represents the frame above mentioned, so that one could be readily constructed from the illustration without the need of any further description.

An Effective and Simple Wool-Press.

Where there are only a few fleeces to be handled at shearing time, there is no necessity to use a wool-press for the rapid tying of the fleeces. A flat table may be used, upon which to spread out the fleeces; the sides and ends are first turned in, and the whole then rolled up neatly and tightly, and tied; three twines are put around it, no more string being used than absolutely necessary. But where hundreds, or thousands of fleeces are to be packed, a press that can be quickly worked should be used. Such a press is shown in the accompanying engraving, which represents a section of the table. The presser consists of a fixed board, and a sliding



A CONVENIENT WOOL-PRESS.

one behind it. The slide is moved forward by pressing the foot upon the treadle, and when

the foot is lifted, the weight, seen behind the table, lifts the rod, and the elbow-jointed lever above the table, and draws the slide back. A fleece is folded rapidly one way upon the table; is put between the sides of the press; the foot is applied, and the fleece is squeezed very tightly. Some balls of twine are placed on pegs on the slide, and the strings are drawn across the press, through slots made for them in the front, before the fleece is placed in the press. The strings are tied quickly, cut with a knife, kept in a proper place at hand, and the fleeces are thrown upon a heap near by, until they are bagged. To make this press, all the materials needed are some timber, a board, some oak or hickory rods and pins for the joints, a few screws, and a few screw-eyes and staples.

Slatted Stable Floors.

A dry stable floor is very desirable, but very rare. It is a difficult task to keep a horse clean that rests upon soiled litter. The difficulty is not so great with mares as with horses. By using a slatted floor, properly constructed, with drain channels beneath

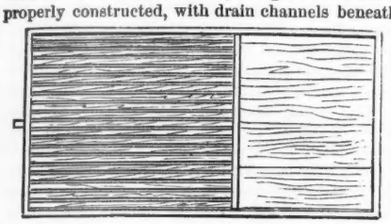


Fig. 1.—A STABLE FLOOR WITH SLATS.

it, the litter being dry, the horse may be kept clean. The floor may be made of square bars of chestnut or spruce, an inch-and-a-half or two inches thick, with half-inch spaces between them, and having the ends let half-an-inch into the end pieces. The frame, as shown in figure 1, is held together by quarter-inch iron rods, with nuts and washers at each end. These are sufficient for one floor five feet wide. This frame should fit the stall closely at the width, but need not be longer than half its length, as it is not needed under the fore feet. The forward part of the stall may be planked to make the whole level. The drains should be channels, cut with a chisel, ax, or gouge, in the shape shown at figure 2. The moisture draining through the open spaces of the floor, is carried off by these to the gutter in the rear. Such a floor may be used without any bedding whatever, if dry, clean sand is scattered over it twice a day. Where such sand can be procured, this plan is healthful and advisable, or where litter is scarce, bedding may be dispensed with altogether on this floor, which is always dry. When clean sand is used, it is very easily brushed off of the animal's coat, but if the sand is loamy, the coat can not readily be kept clean.

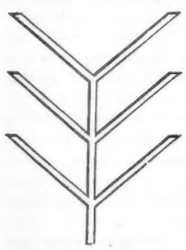


Fig. 2.—CHANNELS.

The Winter Vetch in Hungary.

BY G. CSELLEI, ALTENBERG, HUNGARY.

[Hungary is a country about which our people probably know less than of any other portion of Europe. It is eminently an agricultural country, and the farmers are generally a remarkably intelligent class. The *American Agriculturist* finds a larger number of readers in Hungary than in any other part of the continent, and it is occasionally in the receipt of interesting communications from Hungarian farmers; an example of which is here given with thanks to the writer from the EDS.]

"The Vetch has been raised with us, (Wieselburg Co., Hungary,) for a few years, and seems to be valuable for fodder; it has been raised in Switzerland —to which country it was imported from England —since the year 1869, and in spite of the severe north winds of that country, it succeeded very well. It is sown in the end of August, or in the first part of September, mixed with rye, in the proportion of about 2 bushels of vetch and 1 bushel of rye to the acre. The vetch is sown after wheat, in deep-plowed and well-manured land, and is followed by sugar beet, green corn, spring vetch, or potatoes. The Winter Vetch may be mown early for dry fodder, and gives the great yield of 4½ tons in hay per acre. This large yield results from its numerous branches and abundant leaves; when mown early in spring, it grows again, and gives a comparatively good yield of seed also.

Our farmers here procured the seed in the year 1871, from Switzerland; at that time the price of 100 pounds was about $4. Until recently it was only sown for seed, because the seed was yet scarce with us; in the future it will be raised for green food also. The Winter Vetch may be mown about the middle of April; the second mowing, i. e., the grain or seed harvest, occurs at the same time as that of oats. The following directions may be given to secure a good yield of Winter Vetch: 1. The sowing must be done in the first part of September. ....2. Two or three bushels of vetches may be sown to an acre, thoroughly mixed with half to one bushel of rye....3. If the growth of the crop is very luxuriant in the autumn, it must be slightly mown, (or pastured by sheep or calves)....4. For the mixture of vetch and rye, we here use the so-called "Johnrye," because this remains succulent for a longer time than the common kind.—The Winter Vetch will become an important crop for our farmers, because we raise an early green fodder of an excellent quality, and the production of winter crops is much more secure and abundant than that of spring crops. I intend to send a new seed of Winter Vetch to America for trial this year.

A Machine for Sorting Potatoes.

Those who grow potatoes largely have much trouble in sorting them into different sizes, the work being done by hand, is consequently slow. At the best it is disagreeable work, and a machine in which it could be done, would be very desirable to have. Such a machine is here described and illustrated. It is intended to be operated much in the same manner as a grain fanning mill, but without the blowers. It consists of two sieves, made with longitudinal bars with spaces between them, of such

Fig. 1.—SIEVE OF SORTING MACHINE.

sizes as will permit the smaller potatoes to pass through; these have spouts at the lower corners, by which the larger potatoes, that do not pass through the spaces, are discharged into boxes at the sides. The sieves are like that in figure 1. They are hung loosely, by means of iron rods, in a frame, as shown at figure 2, (which shows the end view of the machine), so that they may be shaken easily. As they are shaken upon the upper sieve the potatoes are separated, the smaller ones falling through the spaces on the second sieve, where they are again assorted, the smallest passing through on to the floor or into a box placed to receive them. The sorted tubers are caught in the side boxes, as shown. Upon the top of the frame, the side view of which is shown in figure 3, there is a hopper, into which the potatoes are thrown with a scoop, and from which they pass through an opening in the bottom on to the sieves. There is no patent on this machine, nor do we know of any machine that is used for this purpose, of any kind whatever in the country. Any person needing or wishing for the machine, must either make it for himself or order it made. Any carpenter or mill-wright ought to be

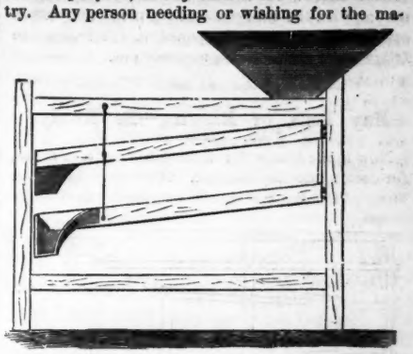


Fig. 2.—END VIEW OF MACHINE.

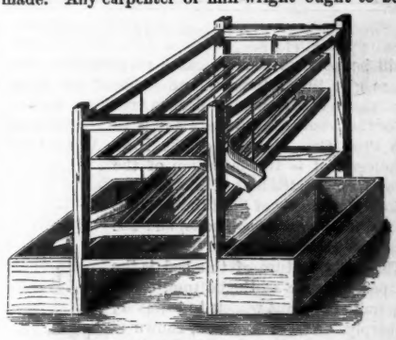


Fig. 3.—POTATO-SORTING MACHINE.

able to make one with the help of these engravings and this description. As to the size and proportions, these may be chosen to suit any circumstances. In hight the machine need not and should not be more than 3 feet, for convenience in use; for length, 5 feet would be a moderate size, and for width 30 inches to 3 feet. The material may be pine or chestnut for the frame, and ash or oak for the sieve bars, which have the heaviest wear.

A Guide for Sawing Logs.

Some have asked for a method by which inexperienced persons may be able to saw logs, or shingle-blocks, square at the ends. It is very easy for beginners in the art of sawing to saw these uneven, and to do otherwise is almost impossible. There are several reasons for this: one is, if the saw is not set truly, it will run to one side; old sawyers, with great trouble, prevent this by constant pressure on one side of the saw. Another reason is that new sawyers can not keep the handles of the saw steady and upright, but permit it to "wobble" about, and at every "wobble" the cut goes to one side. But with a guide to lead the eye, almost any person can, by using care, saw a log squarely at the ends. Such a guide we have occasionally improvised for "greenhorns" at sawing, by taking a flat

LOG, WITH GUIDE FOR SAWING.

hoop of a flour barrel, and tacking it to the log with two shingle nails, as shown in the illustration.

Then a narrow cut should be made on the top of the log with the ax, for a starting point, and with a saw properly set and sharpened, it will be easy to follow the guide and saw a square cut.

Hay Beds, or Rigging—Be Ready.

Now is the season for making hay beds, or racks, for use in the hay harvest. If delayed later, the hurry of the haying will be so pressing that there

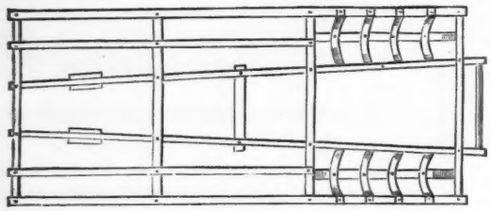


Fig. 1.—IOWA HAY RIGGING.

will be no time then to make preparations. We here give illustrations of two kinds of hay beds, which are easily made, and are very handy in use. For that shown in figures 1 and 2, we are indebted to Prof. Geo. Morrow, of the Iowa Agricultural College. It is the invention of the Farm Superintendent of that institution. It is made of light timbers, put together with carriage bolts, and has curved guards to cover the wheels. The chief feature of this bed is the tapering frame at the bottom, which permits the front wheels to turn very sharply. A standing rack, shown at figure 2, is fixed to the front, both to help support the load and to hold the reins while the driver is loading. At figure 3 is shown a form of rack common in some parts of the country, and this is probably on the whole the lightest, strongest, and best of any in use. It consists of a bottom frame, upon which

Fig. 2.

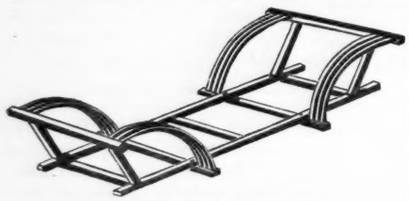


Fig. 3.—COMMON HAY RACK.

two boards may be laid, a front and hind cross-bar raised by sloping standards, and from these bars to others beneath the bed, are bent laths, which act as guards over the wheels.

Pure Milk for Villages.

One of the family troubles with those who live in villages, and especially in those where the population is chiefly employed in factories or workshops, and where the amount of money to be spent for the family supplies is very limited, is the very unsatisfactory quality of the milk. Now there is nothing more important to the welfare of a family of children than the purity of the milk they use. Nothing more certainly carries with it unwholesome or poisonous taints than milk. The taints of typhoid diseases have, in many well anthenticated cases, been carried from the family or house of a milkman, to those of the consumers of the milk. Hundreds of deaths in the outskirts of the city of London, in England, were not long ago traced to impure or infected milk, and in one notable case, 70 deaths from this cause were proved to have occurred from typhoid fever, carried from a farmhouse with the milk, to a large school. This is but one, although the worst, of the unfortunate results of the use of bad milk. To procure milk fit for the food of young infants, is always difficult, and in many cases impossible, under the present system of milk supply in cities, towns, and hamlets. Rural villages are no better furnished than large cities; but those are not so unfortunately situated as regards a remedy as the cities and larger towns. A system of milk supply, brought into operation in a small manufacturing town in England, during the past five or six years, offers an interesting example of what may be done in similar cases here. The village of Beckwith, in the northern part of England, is inhabited chiefly by colliers who work in the adjacent coal mines. Previous to 1871, the supply of milk in the village was both deficient and defective, and disease and mortality amongst infants and children were very frequent. In 1871, the owners of the principal colliery, with a view to benefit their work people, procured some cows and established a dairy on novel principles. A milk-route was opened, and the milk-wagon stopped at appointed places, at stated times. At these times and places, milk was delivered to the customers who called for it, the price being 5 cents a quart. The cheapness should be noticed, as reference will be made to this with other matters presently. The demand for the milk at once exhausted the supply, the children coming in crowds with their cans to the delivery places. The sales of the milk the first year, were over $2,000, increasing to nearly $3,300 in 1875, when 22 cows were kept, and in the latter year the average income from each cow was thus nearly $160. The dairy is stocked with Short-horn cows, as these, when dry, are readily turned into beef. We might here add, as our own experience, that cows of this breed furnish the most palatable and satisfactory milk for such a dairy, and whatever may be the advantages of other cows for other purposes, none can compete with Short-horns for the milk dairy. The management of the dairy, as may be expected from the results, is of the best kind, the cows being well fed and well cared for. The following figures, the account of the dairy for 1875, should be well noted:

RECEIPTS.	
Milk sold at 5 cents per quart	$3,282.83
4 cows sold	465.00
11 calves sold	110.00
One bull sold	157.50
	$4,015.33
EXPENSES.	
Rent of 34 acres pasture	$ 412.50
34 tons of hay, @ $30.00	1,020.00
Meal	180.00
Grains	315.00
Keep of horse	65.00
2 cows purchased	320.00
3 cows purchased	270.00
Bull purchased	315.00
Wages	650.00
Interest on capital, at 10 per cent	284.00
Balance profit (191.83)	183.83
	$4,015.33

These figures are interesting, because they go to show that a similar enterprise could not fail to be successful here, if managed only moderately well. It will be observed that the expenses include a balance of $320 for purchase of stock, over and above receipts for sales; that the rent of pasture was about $12.50 an acre; the cost of hay was very high, as compared with that prevalent here, and that the allowance for interest was ample, and that the profit in addition was respectable. If all this could be done, in this case in England, it is not easy to see why it could not be even surpassed here. Certainly, our rural villages ought to be supplied with pure milk, at the very reasonable rate of 5 cents a quart, and a handsome profit left to the dairyman, who would have the enterprise and skill to manage it. Otherwise a coöperative dairy might be established profitably.

Legal Protection for the Dairy Interest.

A bill was some time ago introduced into the New York State Legislature, by Senator Starbuck, of Jefferson Co., entitled: "An act for the protection of dairymen, and to prevent deception and secure fair dealing in sales of butter and cheese." After various amendments have been made, the bill provides that any article manufactured or sold in semblance of butter or cheese, that is not made wholly from milk or cream, but into which animal fat or oil enters as a component part, shall be distinctly and durably labeled "Oleo-margarine," and that all cheese made from milk deprived of cream by skimming, shall be labeled "Skimmed Milk Cheese." It is hoped that this bill will become a law, with the necessary amendment noted below. It is what the *American Agriculturist* has advocated for years, or from the very first appearance of "oleo-margarine" as a *fraudulent* substitute for butter, and as a *fraudulent* substitute for cream in cheese. We emphasize the word "fraudulent," because many interested in passing off the substitute upon unwitting persons, have pretended that our objections were directed against the substance itself, and not against the fraudulent use of it, and its unfair competition with pure dairy goods only. There can be no possible objection to the manufacture and sale of oleo-margarine in an honest way, and none against the purchase and use of it by any persons who are inclined to it as an article of food, or for preparing food. But the objection lies wholly against the sale *as butter*, of something that is *not butter*, and wholly inferior to it in value, at a low price, both on the general principle that it is a swindle of the public, and that it positively depresses the market value and deteriorates the legitimate character of butter. The dairy interest has suffered greatly from this fraudulent competition of an article that cannot stand upon its own naked merits, but only when clothed in the guise of dairy butter, or full milk cheese. If people wish to buy a tub of fat, distinctly labeled "Oleo-margarine," or a box of cheese with the label "Skimmed Milk Cheese" plainly before their eyes, no harm is done to any one, and we should be the last to question the propriety of every person doing as he pleases about it. It is the foreign market, which opened so auspiciously for American dairy products, that has been flooded with the fraudulent butter and cheese, and the term "American," as applied to these false dairy goods, has become known as a brand covering a quality fit only for the very poorest trade. A vast injury has been done to the American dairy interest in a quarter where it will be very difficult to counteract it, and many years will hardly suffice to restore the good name of American dairy goods in the foreign markets, in consequence of this deception. The various dairy Boards of Trade must see to it that this law, if it should be enacted, (of which at the present writing there seems some doubt, from a useless and embarrassing clause in it, forbidding railroads to carry illegitimate goods), shall be enforced, watching especially the foreign markets, and tracing any infringement to the perpetrators. It is not to be expected that so profitable a business as selling cheap tallow for costly butter and cream, will be relinquished without a struggle; but if dairymen permit it to continue, to their detriment in profit and reputation, while there is a law to protect them, there will be no blame but to themselves.

Lessons from Russian Agriculture for American Farmers.

We recently referred to the fact that the Russian Government had bought a great number of American plows for shipment to the wheat growing regions of Southern Russia. We understand that large purchases of other implements and machinery, including portable engines and thrashing machines, are contemplated, and that a Russian agent is investigating the merits of various machines for the purpose of selecting the best of them. All this shows that the Russians do not intend to give up the foreign markets for wheat which they have held so long, without a struggle, and that if we, who have been able to undersell and displace them from these markets, do not meet them with equal enterprise, we may be compelled to relinquish the advantages we have gained. Now it is well that we should know something of the agriculture of the people with whom we are brought into so direct competition, and this we may learn from the returns collected by the British Board of Trade, and recently published, relative to Russian agriculture. These returns, although published in the volume

for 1876, refer to statistics of the crops of 1872. They are, however, of great value in their present relation, because little or no change has occurred since that year, which was an average season. The area of farms in Russia amounted to 1,244,367,351 acres, of which 527,426,510 acres, or nearly one-half, are covered with timber. As to the crops, the following tabulated figures are given, viz. :

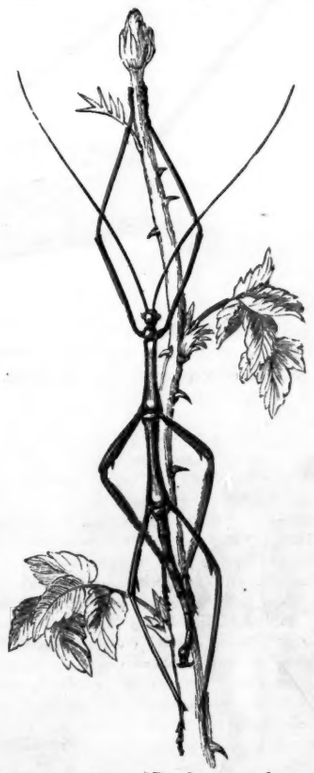
	Acres cultivated.	*Bushels produced.*	*Aver. ₱ acre.*
Wheat.....	28,743,390	157,938,000	5½ bushels
Barley.....	15,511,600	124,753,750	8 ..
Oats.....	32,818,890	543,622,750	16⁶/₁₀ ..
Rye.....	66,398,540	546,832,000	8²/₁₀ ..
Buckwheat..	11,307,660	86,256,000	7½ ..
Potatoes	3,169,010	370,876,000	117 ..
Grass.....143,511,940	....	....	

The average crops, with the exception of that of potatoes, which surpasses our average, are seen to be much less than ours, or less than one half; wheat being very low. Our ability to compete with Russian farmers is thus seen to consist in our larger crops. But if by better farming, and the use of labor-saving machinery, they can double their product, our occupation is gone as caterers for the bakers and bread eaters of England, or in fact of any portion of Europe. We shall then lose our only foreign market for wheat, and this is a very important thing to us, for if our surplus product is thrown upon our own market, already flowing over the brim and escaping, and shut out from foreign countries, to what a depth of unprofitableness will prices sink. Nothing but an even balance between supply and demand keeps values at such a level that the producer's labor is properly paid for. If we have one-fourth or one-third of our whole product seeking a market which cannot be found in our great mercantile centers, what then will fix the value of wheat, and with it of all other grains, and many other products? Nothing certainly but the will of the buyer if one can be found, and the poverty, but not the will, of the urgent seller.

There are some considerations involved in this question which are of great importance to us. If the Russian farmer, by the use of our methods, produces more bushels per acre, and therefore cheaper grain, can we do the same by our product? Can we by better farming double our average, and therefore reduce the cost of wheat nearly one-half, and produce some other crops on the ground that can thus be spared, so that we may not overstock the markets of the world? If so, what other crops can we produce? Is there any better way of meeting this certain dilemma than to direct our attention to the rearing and feeding of cattle, and, by means of this, so add to the fertility of our farms that we can reach an average of 27 or 28 bushels of wheat, and 75 of corn per acre, thus enabling us to turn half of our fields to pastures, or to roots or fodder crops, wherewith to feed more stock, and fertilize our more prolific soil? These questions are worth thinking over and discussing.

A New Enemy to our Forest Trees.

A most singular case of damage to forest trees was brought to our notice last summer by a letter fom W. C. Snow, Esq., of Yates Co., N. Y.; since then, we have had the pleasure of meeting Mr. S., and learning the particulars more in full. We speak of the case as singular, as the damage is caused by an insect not usually regarded as destructive, and is, so far as can be learned, limited to his immediate neighborhood, and mostly to his own woods. The insect in question is popularly known as the "Walking Stick" or "Stick Bug;" it belongs to the same family of insects (*Orthoptera*) with the grasshoppers and locusts, and is known to entomologists as *Diapheromera femorata*, and in some works as *Spectrum femoratum;* it is shown in the engraving, of a rather smaller size than the full-grown insect, which is three to four inches long, with long slender legs, and being of a brownish color, it has when at rest much the appearance of a twig. When young, the insects are greenish, but as the new growth of the trees changes from green to ripeness, these insects, according to Mr. S., change color also. Generally, these insects are not at all common, though from their form and color, they probably often escape notice. We have rambled the woods rather extensively, in different parts of the country, and do not think we have met with, except in Texas, an average of more than one or two in a year. Mr. Snow has 49 acres of wood, mostly second growth of hickory and several species of oak. In 1874, the first year after he went to live on the farm, the insects, the Walking Sticks, appeared in such numbers as to denude of their foliage, as he estimates, the trees upon some 25 acres. In 1875 they appeared in comparatively small numbers, and did but little damage; last year, 1876, they were worse than two years before, covering the same area, and to a rather greater extent, as he estimates that the trees on some 30 acres were stripped of their leaves. They prefer the black, red, and rock-chestnut oaks, to the white oak and hickory, which they molest but little, and only after the other trees are stripped. So thorough was the work of these insects, that from a distance the woods appeared as if a fire had gone through them. Their destructive work commences to be visible about Aug. 1, and continues until they are stopped by the frost. The insects appear to keep together in a body, going from tree to tree, and though a few were scattered about the orchard and vines, no damage could be traced to these. Their numbers, according to Mr. Snow, are almost beyond comprehension; they cluster upon a limb or fence-rail so thickly that they pile up upon one another, and one can not enter the wood where they are, without having numbers of them upon his clothing. The injury to the trees by the invasion of 1874 was manifest in the death of many of the branches that were stripped by the insects, and Mr. S. fears that many trees will succumb altogether to the more severe visitation of last year. The standard works upon insects give almost no information about the Walking Stick, not even describing their manner of



THE WALKING STICK.—(*Diapheromera femorata.*)

breeding; one says that they live upon leaves, that "they have not proved so injurious as to particularly attract attention"—a statement with which Mr. Snow's experience is widely at variance. It is certainly most curious that an insect, elsewhere regarded as rare, should appear just in this limited locality in such force as to be astonishing by their numbers and their destructiveness. We are not aware if the great State of New York affords a State Entomologist, but if there is such an officer, here is an excellent opportunity for him to do useful work—in tracing the habits of this insect, and in suggesting the means for staying its progress. We call attention to this case in the hope of calling out information. If any readers have knowledge of similar ravages, or any experience in the destruction of the insects, we hope they will communicate it.

A Self-Closing Salt Box.

"J. A. W.," Mount Hope, Wis., sends a sketch of a salt-box with a self-shutting lid, that can be easily opened by horses or cattle. This is shown at figure 1. The lid has a rod or board attached to it, which is weighted, so that the lid will easily open when touched. The animals soon learn to lift the lid and reach the salt, and when they have supplied their wants the lid closes of itself again. To prevent it from opening too far, a strap or cord is fastened to the lid, as shown. A method of attaching a salt-box to a horse's feed trough, is shown at figure 2. This lid is easily opened by a horse and being kept from opening too far by the cord, shuts itself when the horse withdraws his nose.

Fig. 1.

Fig. 2.

Lawn Mowing Machines.

One need not be very old to recollect when a lawn mower was a rarity; here and there an imported machine was in use, but those who had lawns, generally cut the grass with a scythe. We do not know exactly when the first lawn mower was made in this country, but the first one we saw, and used, was in 1867, and they can not have been made many years earlier. The development of this manufacture has been remarkable; several establishments have sprung up for making the machines, and the export trade in them is very large. While the English have made scarcely any improvements in their machines, our manufacturers each year find some point in which they can increase the excellence of theirs, and at the present time, the mowers of the best makers are as near perfection as we can expect to see in implements for the special work of mowing lawns. Our makers boldly place their machines in competition in England—that country of fine lawns—and their superiority to the cumbersome English machines has been so marked, as to overcome at once all national prejudices, and the testimony of the English horticultural journals is not only positive, but even enthusiastic in favor of American lawn mowers. As an indication of their popularity in England, we may mention that one house in London has a contract with one of our prominent makers, to supply them with a thousand machines yearly, for a term of years. Large numbers of our machines go to the continent of Europe, and recently considerable orders have been received from Australia. While we are gratified at this success of an American manufacture abroad, and are glad that we can help make the English lawns still more perfect, we find still more satisfaction in the fact that the perfection of the lawn mower has increased the number of lawns at home, by making it possible to keep them in order without too great an expense of time and labor. At present there are few places with an expanse of grass of sufficient extent to be called a lawn, where there is not a mower; indeed, so easily is the work done, and so effective are these machines, that it is no rare thing to find those who have but a mere city yard, clipping the grass with a mower. Not only has the number of lawns increased within a few years, but their character

is wonderfully improved. For a great part of the season, frequent mowing is beneficial, and unless the lawn is very large, it is merely a pleasant exercise to run over it with the machine every week. In parks and large places, the surface is too great for the hand mower, and to meet the needs of these, the manufacturers supply horse and pony machines by which the work may be done very rapidly. "Which is the best lawn mower?" is a question that is often asked. Some very puzzling questions are put to us, and if asked, which is the best mower and reaper—which the best seed sower—which the best sewing machine—and which the best lawn mower, we are obliged to say, "We do not know." With these machines, and others we might name, improvement has so followed improvement, and several are so near perfect, that if there is really any choice between them, it is founded upon differences that are of no great importance. Each person thinks the machine he has, the best, and so it is for him, as he has become thoroughly acquainted with and understands its use. So in the case of lawn mowers, we can not undertake to say which is the best, but give illustrations of the two leading styles, with the claims their respective manufacturers make for them.

Fig. 2.—THE PHILADELPHIA LAWN MOWER.

The two lawn-mowing machines that, taking the large numbers sold as an indication, may be regarded as the most popular, are the "Excelsior" and the "Philadelphia." The "Excelsior" is made by the Chadborn & Caldwell Manufacturing Company, at Newburgh, N. Y., where they have a very extensive establishment devoted to their production. The general form of this machine is shown in fig. 1, which represents the usual size. They make four different sizes of hand mowers, and several styles of large machines, to be operated by horse-power. This, if we mistake not, was the first machine in which the moving parts were covered, and the entrance of dust and other matters to the gearing thus prevented. The makers claim for their machine "great simplicity and durability." The "Excelsior" has a remarkable popularity in Europe, the demand for it in England and on the Continent being large and increasing. The "Philadelphia" lawn mower is made by Graham, Emlen & Passmore, Philadelphia, Pa. The usual pattern is that shown in fig. 2, which is made of different sizes, to cut from 12 to 20 inches. This machine, as compared with the cumbersome affairs first introduced from England, looks like a mere toy; but when tested upon the grass, it will be found that the increase of weight, and multiplication of parts, do not, of necessity, add to the effectiveness of a machine. The popularity of this style is such that it requires about 5,000 to supply the season's demands. The same firm make other styles of hand mowers, some of them especially suited for city yards. The use of horse or pony machines is rapidly increasing; indeed they are indispensable in public parks, squares, and for private places, where the lawn is large. We give an engraving (fig. 3) of the largest Philadelphia mower. In this style the cut is 36 inches, and as the driver is provided with a seat, the labor is reduced to a minimum. Other styles of horse machines (fig. 4) are made, to be guided by hand, and especially adapted to hilly or uneven lawns, and to those where shrubs and other obstructions are numerous. As we have used lawn mowers of both the manufactures here described, it will naturally be asked which is the best. That is a question we are unable to answer. If one has either, and cannot keep his lawn in perfect condition, he cannot hope to find any machine that will allow him to do it. Both machines received awards at the Centennial, and no doubt the judges were as much puzzled as we are to decide between them.

Fig. 3.—PHILADELPHIA HORSE MOWER, LARGEST SIZE.

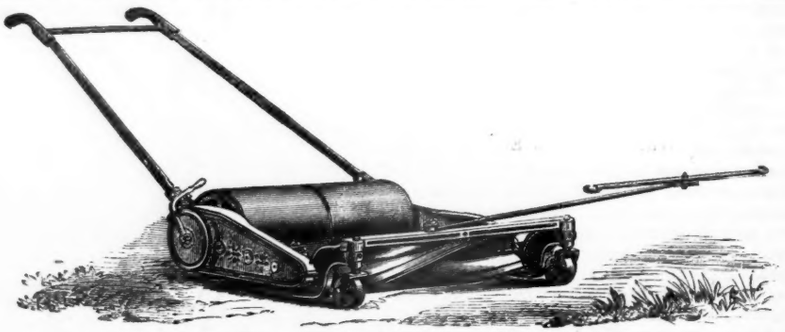


Fig. 4.—PHILADELPHIA PONY MOWER.

Fig. 1.—THE EXCELSIOR LAWN MOWER.

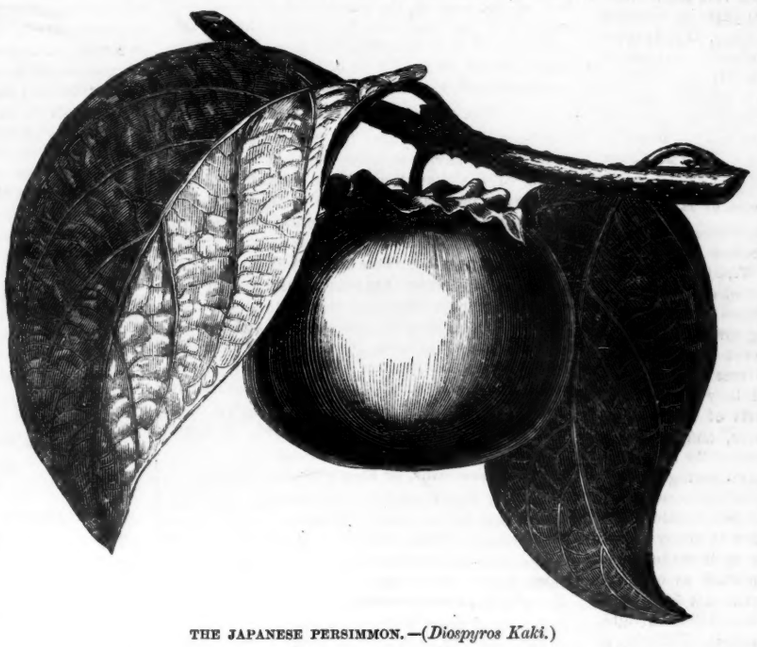
In the American mowers there is not, as a general thing, any provision made for collecting the clippings. If the mowing is done as frequently as it should be, to keep the lawn in the best condition, the clippings are very short, of young and tender grass, and as scattered by the knives, are soon so shriveled as not to be noticable; they remain upon the lawn to serve as a mulch to the grass roots, and at length by their decay go to fertilize them. Of course, if the grass has been allowed to grow too high, the clippings must be raked off; they answer admirably to mulch strawberries, or other plants, or if in sufficient quantity, may be cured. Hay made frem lawn clippings should be kept by itself, to afford a treat to milch cows in winter.

Whichever machine is used, what is popularly known as "elbow-grease," is required; but the consumption of this may be greatly reduced by the proper application of another kind of grease, in the form of oil, to every bearing, or other part where there is friction. In dry weather, the rapid motion of the knives stirs up a great deal of dust, and the injunction placed on some machines, in large letters: "Oil frequently," should always be observed.

Notes from the Pines.

Spring Flowers—New Japanese Persimmon, and Other Horticultural Matters.

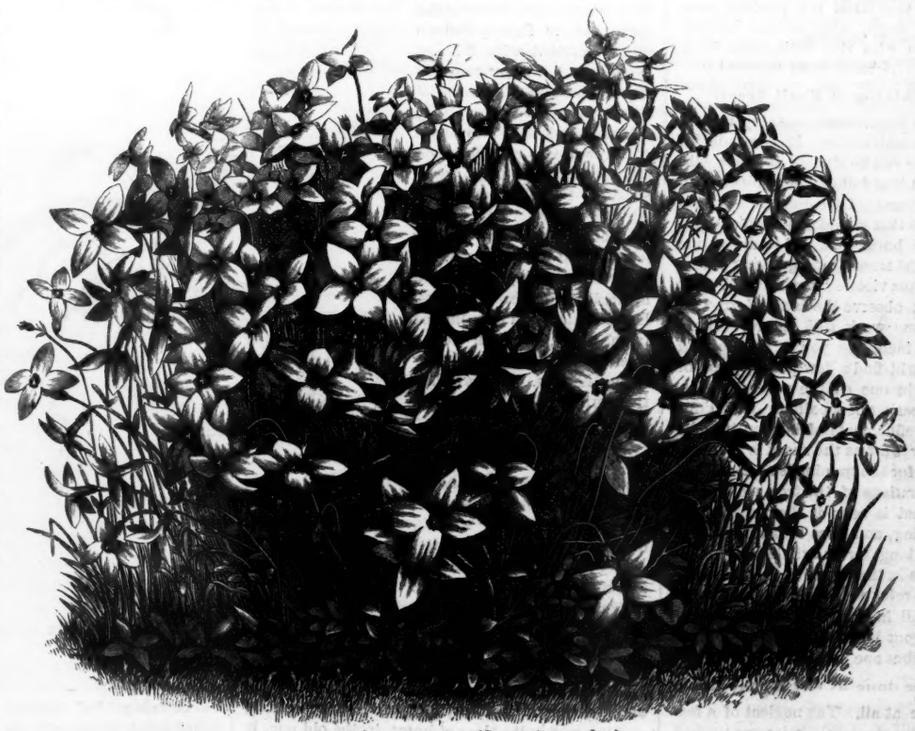
What is there in writing "in the first person I," that seems so attractive? I write articles editorially on various topics, and it is but occasionally that any one asks to know more about them; but the moment I write from "The Pines," about matters of no greater interest. I am in the receipt of letters thanking me for this, wishing to know where that plant or article may be had, asking for further explanation, etc. It has long been no secret that "The Man at the Pines," the title many correspondents have adopted, is the Managing Editor of the *American Agriculturist*. I commenced, "Notes from the Pines," for the reason that writing in the first person, allowed of a more free and colloquial style, and enabled me to bring under one head numerous odds and ends that were not of sufficient importance for separate articles. The "Notes" have brought out many pleasant letters, and I have thus become acquainted with readers who would never have thought of writing to "The Editor." They have of late been discontinued for but one reason: writing in this familiar style requires more space to describe a plant, or an operation—in short, to give the same amount of *matter*, than the more concise style adopted for editorials, in which superfluous words are expunged, and only compact and "solid chunks of wisdom" are allowed. As many have kindly asked, "what has become of the Man at the Pines," and have indicated a desire to hear from him, I resume the "Notes," without, however, promising to supply an uninterrupted series.



THE JAPANESE PERSIMMON.—(*Diospyros Kaki.*)

Bluets—Houstonia.

Did it ever occur to you that much of our attachment to the home of our youth is due to the early spring flowers of both the garden and the woods and fields? Few are so dull as not to be impressed by the change of seasons, and the most striking of all the changes, from winter to spring, is so distinctly marked by the appearance of the early flowers, that even those who care nothing (or affect indifference) for flowers in general, notice, and are even pleased with, the very earliest. In each locality there are a few flowers that are always first, and in our rambles as children, we look upon these as sure tokens that winter is at last over. If, in after life, we live where the early flowers are different, the season never seems the same; spring comes, but it lacks something of the old charm; there are early flowers everywhere, but the advance guard of the floral procession is changed. The other day a young friend brought in a clump of "Bluets,"—but he brought in more than that; he did not see the dim forms of long ago that the little tuft of this most charming of spring flowers made visible to me. After the May-flower, or Trailing Arbutus, this was my special spring flower of boy-time. Indeed it is much more fresh and spring-like than that, which, beautiful though it is, has a kept-over look in its foliage which detracts something from the beauty of its flowers. The good Professor Bailey, writing one spring from West Point, and enumerating the early flowers he had found, remarked that he did not enjoy these, as he sadly missed the Bluets so plentiful around the town which was the birth-place of both of us. I took up a fine sod of the plant, boxed it, and by great good luck—for we had no expresses in those days — it reached him. I wish I could put my hand upon the letter in which he acknowledged the receipt, that you might see how a learned professor, of world-wide reputation, could be in ecstacies over this little flower that he loved as a boy. While the plant has a wide range—from Canada to the Gulf—it does not occur everywhere. It grows most plentifully in moist places, usually forming very dense tufts. The slender stems are from three to six inches high, somewhat branching, and having small, pale-green leaves; each little branch is terminated by a small, 4-parted flower, sometimes almost pure white, but generally with a tinge of blue, and occasionally distinctly, though delicately, blue, which is darkest when the flowers first open. The plant is sometimes so abundant as to completely cover patches several yards across. The engraving gives a good idea of the appearance of a luxuriant clump. With us, near New York, it blooms in early April, sometimes in March, and continues until the summer drouths come, though it is never so fresh and pleasing as at first. The name "Bluets" is perhaps more positive than its color will warrant, but is vastly preferable to another common name sometimes given—"Dwarf Pink." The delicate little thing has had a hard time at the hands of the botanists, who have given it various names, some of which, as *Oldenlandia*, were out of all proportion to the size of the plant; fortunately they have found that it may properly retain *Houstonia*, which was given in honor of an English botanist, Houston, and its specific name, *cærulea*, refers to its bluish color.



A CLUMP OF BLUETS.—(*Houstonia cærulea.*)

Cultivating the Bluets.

If this little spring flower had been sent from Japan or some far off place, how popular it would be! As is very often the case, it is much more frequently cultivated in Europe than at home. Indeed, I never saw it in cultivation, except on my rock-work, where, though it gets very dry in summer, it has flourished for several years, in company with the pretty little Early Saxifrage. It is a capital house plant; take a moderate-sized seed-pan, or other dish of similar shape, neatly fill it with a clump of *Houstonia*, and give it water as needed, and it will last for months. There may be some prettier household ornament, as easily achieved as this, but I do not know what it is....Just now there is some interest manifested in

The Japanese Persimmon, or Kaki,

which has fruited in California, where it is being largely advertised, and I notice that Messrs. S. B. Parsons & Sons, Flushing, N. Y., offer it on this side. The tree was introduced into New York by Thomas Hogg, who, some ten years or so ago, sent to his brother, Mr. James Hogg, several good-sized plants; and I think a lot also went to Washington about that time; several small trees were given me by Mr. H., in about 1870, and they were in the hands of others in different parts of the country.

One of Mr. Hogg's trees bore, and I had the pleasure of testing the fruit, and at the same time the drawing was made for the engraving on page 221. Since then the tree has been introduced into France, where it flourishes, and has fruited. The winter of 1873–74, so destructive to many plants, put a finish to Mr. Hogg's trees, as it did to mine; this should not by any means be cited as evidence against its hardiness, as in that winter old native trees of undoubted toughness were killed outright. In Japan they have numerous varieties, differing in the size, shape, and color of the fruit. The specimen given me by Mr. Hogg might readily have been mistaken for a tomato. In taste it reminded me something of a fresh fig, but of a more positive character. I am glad that the agitation in California has directed attention anew to this Persimmon, as I feel quite sure that among the many varieties in cultivation in Japan, some will be found useful in our climate. The tree itself is a pleasing one, assuming a graceful form, with strong, healthy foliage, and when set with ripe fruit, must be a most brilliant object ...I have often referred to

The Cordon Training of Fruit Trees.

To an enthusiast in horticulture, nothing can be more interesting and instructive. It is wonderful how completely a tree can be shaped to one's will, and to see the results that follow a mere pinch with the thumb and forefinger. Of course, it is "agin natur" to make trees that would grow tall and upright, stay short and horizontal, and to divert one from making a straight trunk into growing with a spiral one. But to thus violate "natur," and work "agin" it, you must observe the laws of growth, and really all the time work *with* nature. Those who have the time, including young people, and not omitting girls, will find a few peach, pear, or other trees, trained in one of the several styles, to afford a most pleasing occupation. Had Pope been well up in the refinements of horticulture, he would have written, "Just as the shoot is pinched, the tree's inclined," for the training is all a series of pinchings; the aspirations of the tree are so persistently snubbed, that it soon is disgusted, gives up attempts at growing, and goes to bearing fruit. The account is too long for an article or a moderate series of articles in the paper, and a beginner needs to frequently refer to the directions, which are given more in full in Barry's "Fruit Garden" than in any other in our language that I have seen. Cordon training teaches one useful lesson:

The Work must be done at the Right Time,

or it can not be done at all. The neglect of a few days is difficult to remedy, while a longer neglect will spoil the whole, past remedy. Having been successful in establishing oblique and horizontal cordons, I undertook to train some peach trees in spirals; they were fairly formed the first year, but as I was away much last summer at the Centennial, the right thing could not be done at the right time; the result was, my spirals all went to top, and as a consequence went to the brush heap. Some of the trees in my horizontal cordon of apples looked poorly last summer, and I attributed it to the drouth. This spring I discovered it to be borers. The trunk being horizontal, and within about a foot of the ground, the parent borer placed her eggs where, had the trees been erect, they would have been 6 or 8 feet from the ground.....Probably no insect, at least none of modern times, has ever commanded so much attention as

The Colorado Potato Beetle.

It has found its way into the British Parliament; governments have proclaimed against it, and the arrival of a solitary "bug" was of sufficient importance to be "cabled" from Bremen. It is emphatically a "big-bug." Its fame has extended to another continent—for here is a letter from Africa, stating that potatoes there are preyed upon by an insect, and specimens are sent to ascertain if the genuine Colorado insect had carried the "war into Africa." On opening the parcel, I found they were not "Colorado," or even "beetles," but true bugs, claiming kinship with that sad but much-scented one of the squashes. This was sent so far that it had lost its scent, if it ever had one, though it took several cents in postage, when it started. In some remarks about our native

Erythroniums, or Dog's-Tooth Violets,

in April, it was mentioned that we had not succeeded with the imported dry bulbs of the European species (*E. Dens-Canis*), a plant I have had the greatest desire to see, but could never make the bulbs live, much less flower. Two or three years ago, a valued correspondent sent me from England, with a lot of other herbaceous plants, some bulbs of this, right fresh from the ground; these were put out near a rock-work, and quite forgotten. This year, I noticed some leaves, which I took to be very strongly marked specimens of our common native species, but when the flowers opened, there was a surprise indeed! After waiting and wishing these many years, here was the plant, and in flower, and no disappointment with it! Let those who know our common species, imagine the flower of a lively rosy purple, and they will not think me extravagant if I say that this was inexpressibly beautiful. The books speak of its being flesh-colored, and sometimes even whitish, but this in the way of color left nothing to be desired. It is perfectly hardy, having been in neglect for three winters. If the dealers will only import fresh bulbs, we can add a treasure to the list of hardy spring flowers. We have had this spring no less than

Four Erythroniums in Flower.

For beauty, our natives must step a little to one side and let me name this foreign one first; next, the common species, described in April, is most showy; more delicate, smaller, and somewhat later, comes *E. albidum*, with bluish-white flowers, and lastly, the new, very rare, and little known *E. propullens*, from Iowa; being a westerner, it has a great deal of push or go-ahead in its composition, and instead of multiplying, like the others, by making new bulbs close at home, by the old one, it sends out an underground stem several inches long, and starts a new colony there, if not further west, then in some other direction. Its flower is the smallest of all, not being a fourth the size of the common species, and much the color of *E. albidum*. ....The mention of multiplying, reminds me of the remarkable ease with which

The Prickly Comfrey Propagates.

This was described in January last as a forage plant of promise. Last fall Mr. C. E. Ashburner, referred to in that article, sent me a root which, with the top, required a barrel to hold it. The leaves were cut away, and the root left in the cellar, until March, when, wishing to try a few rows as fodder, we began to propagate, putting pieces of the root about four inches long into the sand of the cutting bench; then pieces two inches, then one inch long, were tried; then it was found that the chumps of root might be cut lengthwise, in halves, quarters, or less, and still grow; we found that bits, containing less than a cubic inch, if they only had a piece of the outside portion, or bark, on them, would make a plant. It is too late now to try how far this subdivision may be carried, but I have no doubt, that if chopped into pieces as big as a pea or a pepper corn, properly dried, and then sown in a gentle heat, every bit, with a fragment of bark to it, would make a plant. Should the Comfrey prove to be half as valuable as its advocates claim, it will become a standard crop, and it is well to know that it can be propagated so easily.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE XIII.—LADY-SLIPPERS.

The agricultural papers naturally have a good deal to say about "fertilizers," and in popular botanical lectures and magazine articles, "the fertilizing of flowers" is much discussed. The readers of the *American Agriculturist* never get confused among these matters; but a case "down East," which we have just heard of, shows what may happen. A lecture upon the fertilization of flowers by wind and by insects, was given in the town, the local newspaper had reported it, and the matter was much talked about.—"Is it true," asked one of the citizens of a botanical friend, "is it really true that flowers are fertilized by the wind and by insects?"—He was assured that it was so.—"Well, I should not think that bees could ever carry manure enough to amount to anything, or the wind either."—Here

Fig. 1.—LARGER YELLOW LADY'S SLIPPER.—(*Cypripedium pubescens.*)

the new wine of cross-fertilization, had somehow got into the old bottle intended for guano and the phosphates, and it worked badly.

All the new interest in the subject that we have in hand, began over a dozen years ago, with the publication of Mr. Darwin's little book "On the Various Contrivances by which Orchids are Fertilized by Insects," which was published in 1862. This year the author has brought out a new and revised edition; and this is re-published here in New York, along with the whole series of Mr. Darwin's works, by D. Appleton & Co., so that every one now can obtain it. The old edition had long been scarce, and was never printed in this country.

Having illustrated, from other families of plants, many of the very various contrivances for ensuring cross-fertilization, and having shown what the use and good of cross-fertilization is, it is fitting to give some account of how this is done in orchids—a family in which these contrivances are the most elaborate and special. However it may be with other flowers, it is agreed on all hands that these can not get on without the aid of insects. That is, as a rule, for Nature seems to delight in exceptions, and a few orchid-flowers are adapted to self-fertilization, while as to most this is a sheer impossibility.

With Darwin's new book in our hands, and we trust in those of some of our readers, we may hope to show what a few of these orchid contrivances are. Considering that we are just in season for Lady Slippers, they will best serve for the present article. These form a peculiar tribe of orchids; and the contrivance for fertilization is equally peculiar.

Figure 1 shows a flower of the larger sort of yellow Lady's Slipper, which usually blossoms in June. Figure 2 is a section of the slipper of the early spring species, *C. acaule*, the stemless Lady's Slipper.

What we call a slipper—and which has better been likened to a buskin, or an Indian moccason, is in fact a trap, after the fashion of one kind of rat-trap, the edges of the opening being rolled in, so as to facilitate entrance but hinder return. This acts more effectually than one might suppose. For, on throwing in flies, we find that they seldom get out

Fig. 2.—SECTION OF STEMLESS LADY'S SLIPPER.

of this opening, large as it is in the yellow and white Lady's Slippers. In the stemless species, the opening, although long—occupying the whole front of the pendent sac—is nearly closed, the in-rolled edges of the long slit being brought loosely into contact. The central part of the blossom, which curves downward and covers the upper part of the mouth of the trap, consists of stamens, style, and stigma, covered by a spade-shaped body, which answers to a stamen, as the botanists say, but is a useless one, as it has no pollen. Underneath is the

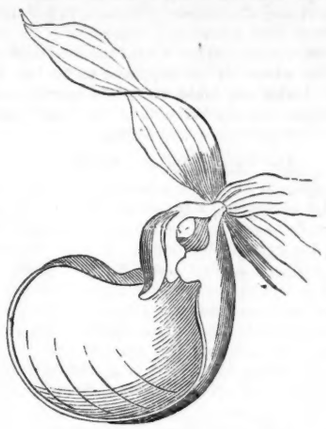


Fig. 3.—SECTION OF FIGURE 1.

broad stigma, which faces partly backwards. It is best seen in the sections, figures 2 and 3. Underneath, a little further back, are the two anthers, one on each side, placed, as we shall see, "where they will do the most good." The bottom of the sac is lined with long and soft bristles, which appear to contain something attractive to flies. There is no honey in the slipper, no pollen can of itself ever fall on the stigma, or be conveyed to it by the wind. In fact, the pollen never falls from the anther of itself, for, although it appears like a damp powder, or like a soft pulp in some species, the surface is covered with a thin film of sticky varnish. This varnished surface adhers to the finger when touched, and brings away with it a patch of the pollen, of the size of the adhering surface.

Now, as to the fertilization, let us copy what we wrote about it in the *American Agriculturist* a dozen years ago. "The flower left alone would be hopelessly sterile. Although we have never seen an insect spontaneously enter the slipper and do the work, we are about as sure that the work is done in this way, as if we had seen it. Probably it is visited by nocturnal insects. The slipper may be entered by the orifice in front, which, in most species, offers the readiest access; or, from behind, by crawling under either anther, and thence under the stigma into the main sac. A large fly, or a coleopterous insect of corresponding size, entering from behind, would probably hit the back of his head or eye against one of the anthers, and as he crept under the stigma, might lodge some of it there. Feeding upon the hairs as he passed on, the front orifice would be before him for egress; but its incurved border would interpose some obstacle. It offers none to entrance; and we presume that the insect enters at the front, and passing onwards, departs by the back door. In departing, whether he turns to the right or the left, he must rub his head against an overhanging anther, and carry off a plaster of pollen. If he then passes to another flower of the same species, and enters it by the front orifice, as he proceeds towards the most practicable exit, he must crowd under the stigma, upon which he will hardly fail to deposit some of the pollen brought from the neighboring flower. Now, that this is really the way of it—that it is intended the insect shall enter at the instep and emerge at the heel of the slipper, and so bring the pollen of one flower to the stigma of another—is as good as demonstrated by the peculiar character of the stigma in this flower. It is not glutinous as in the other orchids, but only moist, and is rough to the touch. Under a microscope this roughness is seen to arise from the surface of the stigma being covered with projecting points, or what would be so if they were longer; and *these all turn forwards*, so that the apparatus may be likened to a rasp, or to a hand wool-card of the olden time; and one can not resist the conclusion that it is *intended to card off* and to retain the pollen brought upon the head of an insect entering at the front, and on its way to get out at the back part of the flower. A more ingenious and effectual contrivance for crossing the flowers of a species by the help of insects, could hardly be devised."

This is a different view from one which was taken by Mr. Darwin in the first edition of his book on orchid-fertilization. He had examined only some of the tropical species. But what we described as in all probability true, judging from the structure, is now a fact confirmed by observation. We have specimens in which a small insect perished on its way out, having got stuck fast to the glutinous mass of the pollen, which it was too feeble to carry away. Mr. Darwin, when this view of the case was pointed out to him, finding that the flies he tried upon yellow Lady's Slipper, were either "too large or too stupid," introduced "a very small bee, which seemed about the right size, viz., *Andrena parvula*." "The bee vainly endeavored to crawl out again the same way by which it had entered, but always fell backwards, owing to the margins being inflected. The labellum [slipper] thus acts like one of those conical traps with the edges turned inwards, which are sold to catch beetles and cockroaches in the London kitchens. * * * Ultimately it forced its way out through one of the small orifices close to one of the anthers, and was found when caught to be smeared with the glutinous pollen. I then put the same bee back into the labellum, and it again crawled out through one of the small orifices, always covered with pollen. I repeated the operation five times, always with the same result. I afterwards cut away the labellum so as to examine the stigma, and found its whole surface covered with pollen."—To complete the evidence, Dr. H. Müller found that this very *Andrena* which Mr. Darwin happened to try, and other species like it, did the work of fertilization naturally for the European *Cypripedium* in Germany.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

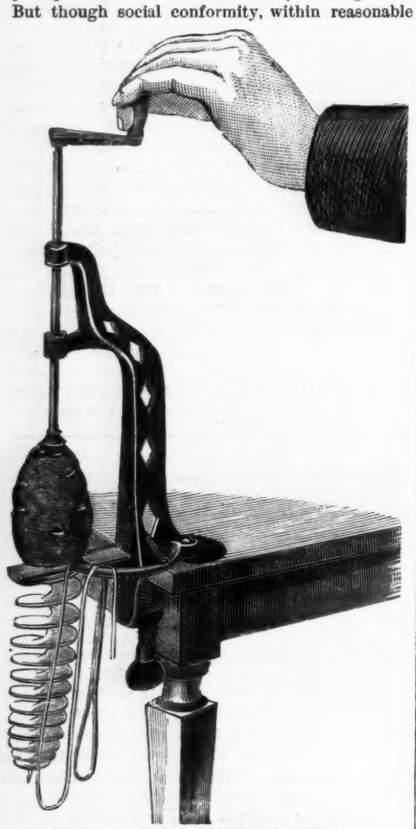
BY FAITH ROCHESTER.

Fitness in Dress.

All acknowledge the propriety of putting on clothing suitable for the work in hand. Has every woman some work to do in this world? If not, why is she here? What right has she to food, and clothes, and shelter, and education, if she renders no service in return? Many imagine that they do the world sufficient service simply by wearing and exhibiting fine costumes—walking pictures, as it were; pretty ornaments for the landscape or the parlor. What do you think of the head and the heart of a woman who chooses that business as her work in the world? Did you read the article on "Daily Beauty," which appeared in the "Atlantic Monthly" many years ago? It was not written for "working women," but for those who could spend most of their time in carriages and in parlors. The idea was broached that the working women of America should be willing to wear a costume distinguishing them as working women, a sort of peasant's dress. Our leaven of democracy renders that impossible, in the way that the author meant. And yet I hope that we shall soon have a genuine working woman's dress, or a costume really suitable for a woman to work in; one that allows freedom of motion, easily made, and easily kept clean; and I am sure that when the "working women" adopt such a costume, no one will long be willing to belong to the other class, and continue the use of a costume more suitable for an Eastern harem than for Christian wives, mothers, and sisters.

How far shall we follow the fashion? Ruskin has been speaking to girls on the subject, in his oracular way, and he says they must make their new dresses in the prevailing style, and then wear them unaltered until they are worn out. But he says they must not use cloth to make great unnecessary bows, and bunches, and loopings, nor scatter bows and buttons about where they have no

use and meaning. I don't remember whether he speaks of bustles, but I am sure sensible persons disapprove of them. But how in the world is a woman to make a dress in the prevailing style of some years past, and avoid all these outrages of taste? She must look sharp, or she will get some garment which demands a bustle to make it fit, and she will be a fortunate woman if she can dress "like other folks," and avoid meaningless loopings and trimmings. Oddity is unpleasant to the person who indulges in it—at least to a modest and affectionate person—and somewhat painful to such spectators as do not like to meet a person not modest and willing to conform to the public taste. When we see a person oddly dressed, we want to know the motive for such action, and feel relieved to learn that religious principles of some kind, prompts the deviation from the prevailing taste. But though social conformity, within reasonable



SARATOGA POTATO PEELER AND SLICER.

limits, is right, let us never forget that Fashion so far is a mere pretender in office, having no just right to rule us; and she never will have a just right until she gives in her allegiance to principles of health and fitness, and neighborly love.

Dressing according to our Station.

Social position has something to do with deciding what we shall wear. It is a common rule that each must dress according to her station, and this very doctrine, perhaps, leads most people to dress beyond their means, in order thus to impress others with their social consequence. The hired girl does not desire to tell every one she meets, by her dress, that she is a "servant," neither do the poor wish to publish the fact of their poverty. So those who rank as the "lower classes," have many a lecture read to them about their wicked extravagance, and their folly in trying to dress like those above them. But the leaven of Christianity works on in the great lump of humanity, and class distinctions crumble away inevitably, and more and more do we draw near each other as members of one great family. It is not uncommon now, for the rich to help to bear the burdens of the poor, by wearing plain and inexpensive fabrics themselves, thus making persons of smaller means feel comfortable at church and in general society. This is the law of love.

I have heard of a woman, now placed in the highest social position of any lady in the land, in a society where extravagance in dress is the bane of women and the ruin of men—a woman of such true womanly worth and strength of character, as to resist the strong allurements of fashion in her circle, and dress with uncommon fitness as a modest Christian woman and the wife of the President of a Republic, where all are supposed to be free and equal. I wish she could know how heartily many an obscure woman throughout the land thanks God for her good sense and courage.

The Care of Baby's Mother.

The baby to which we allude is not two weeks old. Let us suppose it to be not two days old, and speak as frankly as may be allowed in a journal designed for general circulation. If it is a well-behaved baby, its mother needs no other company, though of course she needs a sympathizing caretaker or nurse, and may enjoy the occasional cheerful faces of near and familiar friends. But *rest* is nature's great demand; rest from all exertion and from all excitement. So it is a mistake to talk much by the bed-side, or to read aloud, with the intention of diverting the patient. There is no sweeter cup of earthly bliss, than the tender, hopeful love of a mother for her new-born helpless, and innocent baby. So the best comfort you can give her is, such happy sympathy as may be in your power to give, besides the care she needs as a sick woman. The best thing for both mother and baby is all the natural sleep that can be wooed and won.

It is astonishing to think of the unnecessary fussing that was done over our grandmothers and their babies—the panada with "spirits" in it, supposed to be absolutely necessary for the mother; and all the teas necessary to put the infant's organism in working order—one thing to start the bowels, tea to stimulate the kidneys, one to improve the complexion, and half a dozen more to cure the troubles caused by the unnatural doses of both mother and child. If the baby is to draw its nourishment from the source Nature intends, it should begin the practice very soon after it is properly dressed, not, of course, until the mother feels somewhat rested. To feed it at first with a spoon, is to risk trouble for both mother and child, for the baby needs to learn the use of its tongue and lips, and the mother needs this natural stimulant for the proper adjustment of her organism. Still there may be times where it becomes necessary to feed the baby artificially, but such cases are rare. Nor is it usually necessary to stimulate the flow of milk. It does not often come until the third day, but the scanty fluid Nature gives instead, is just what the infant needs, rather than the teas of various kinds too often given. It is the safer course to avoid much fluid food and drink for a few days when the milk begins to come, it is so apt to be the case that the baby can not take it all, and trouble is sure to follow if the milk is not all drawn. When the babe has once become accustomed to its natural nourishment, and the supply is not too great for the demand, this caution gradually becomes unnecessary. The mother's food should be simple and nourishing, but not too hearty. Her food must feed two, to be sure, but need not therefore be more than enough for one, for Nature has made provision for the case in another way. By eating with a view to providing food for two, a mother will probably overtax her digestive powers, and injure the quality of the babe's food, without increasing the quantity. Enough food for her own good health, is all that is required, and this should contain all the elements needed for the growth of the babe.

Cleanliness and Light.

Cleanliness is not at all to be feared for the sick mother, but is greatly to be desired. There are at this day old-fashioned nurses, who keep a baby's mother's sick-room so foul with bad air, from lack of cleanliness about the patient, that few can bear to enter it. They refuse to change the bedding or the patient's clothes for at least a week—most barbarous treatment of mother and babe, and all the friends. There is no danger from changes of clothes, if the fresh clothing be well aired, and put on without chilling or fatiguing the patient. And washing of the whole body is not at all perilous, if the water used be of comfortable temperature, and the air of the room quite warm. Thousands of women every year have sitz baths before their babes are a week old, and recommend the practice; but though I know by experience that it is safe and comfortable rightly administered, I will not recommend it to any one who has not a nurse or physician accustomed to such baths, and ready to superintend them. Very serious disease sometimes results from lack of proper washing in sickness of this kind, in hot weather. Every sick-room should be kept as light as the patient's comfort will allow—not darkened at all, unless the light hurts her eyes. All reasonable efforts must be made to keep the air pure without chilliness or draughts.

Children's Under-Waists.

A reader of the *American Agriculturist* sends me some anxious inquiries about children's under-waists—how they should be made, and how low the lowest row of buttons may be allowed to come. She would like the same pattern that I use, and she is quite welcome to it, if she will get it in the same way that I do. Probably there are better patterns to be had from the regular pattern venders. I make an under-waist for any child under six years of age, in this way: I tear off a strip of cloth, cotton or flannel, as wide as the length of the child's waist, measuring from top of shoulder to hip, and as long as the loose "bust measure" of the child, allowing for wide hems in the back and room to button, and for a wide hem at the bottom. Having turned in the hems for lapping at the back, double the cloth in the middle, and again, so as to make "four-double," (fig. 1), the last made creases to come under the arms. Hold this up to the child's body, and cut roomy arm-holes where they ought to come, with triangular pieces cut out above the arm-holes, to make the sloping shoulder seams. When opened, the pattern will be as in fig. 2. For half a dozen years of its life, a child's body has no fixed form, and a waist made by this pattern, will be as likely to pinch at the bottom as higher up.

Fig. 1.

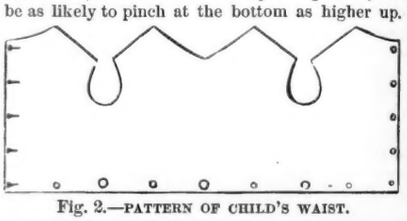


Fig. 2.—PATTERN OF CHILD'S WAIST.

The waist should never be "snug" in fit for a growing child—nor for any one who likes to breathe freely. Older children need some slope of seams below the arms, and when nearly full-grown, darts in front. Never let the waist be tight about the bust.

About the buttons about the waist, I am not capable of deciding that matter outright. It depends upon the comfort of the child, and the convenience of the mother. I have never used more than two rows of buttons on one waist, and those not more than an inch apart. The flannel under-suit worn in winter has no buttons, unless to fasten the upper and lower parts together. In this case, a strong cotton waist is worn over, to which the colored flannel "dress drawers" and flannel skirt are buttoned. When a pair of drawers, and a skirt, button to the same waist, I make but one row of buttons, but use alternate sizes for the separate garments, as shown in the diagram (fig. 2), the larger buttons supporting the drawers, and the smaller ones the skirt. This arrangement answers for summer as well as winter use.

A Potato Peeler and Slicer.

One of the essentials in preparing the choice fried potatoes now popularly called "Saratoga," is to have the slices of uniform thickness, so that they will cook equally. Various slicing machines have long been in use, but we have not had one that would both peel and slice until the one here

figured was invented. It is called the "Saratoga Potato Peeler and Slicer," and is made at Antrim, N. H., by the Goodell Company. It is as simple as possible. A rod, with a crank at one end to turn it by, has at the other end projections to stick into and hold the potato. When the crank is turned, the potato is revolved against a fixed knife, which cuts it in a thin spiral, of uniform thickness, as seen in the engraving. While this is being done, a little knife of peculiar shape takes off the peel as a narrow ribbon, which is seen hanging to the machine in loops; this knife is self adjusting, and accommodates itself perfectly to the inequalities of the surface, even entering the depressions of the eyes. With a little care the potato, if not large, may be kept in one continuous spiral; if in one or more pieces the spiral may be closed up, bringing the potato, or part of it, to its original shape, and then by cutting from the central hole, out, i. e., cutting half way through, the slices will be separate; or, if large, the whole may be cut across, leaving the slices in half circles. In slicing with this, or in any other manner, the slices should be kept in water until wanted for use, or they will become discolored by exposure. One of our favorite ways of cooking potatoes is in the "Kentucky Style," or "Fricaseed," as some call it. This was described in October last, and is especially useful at this season, when potatoes are sometimes not at their best; this machine is exceedingly handy in preparing them for cooking in this manner. If one wishes potatoes, carrots, or other vegetables, shredded for soups or stews it can be done very neatly and uniformly, by first running them into spirals, and then cutting them down in strips. We hope that the inventor of this ingenious little implement, will turn his attention to giving us a machine that will easily, surely, and economically peel potatoes, without the enormous waste that the average Biddy is sure to cause. With potatoes at the present prices, one does not wish to be in doubt which is of the greater probable value, the potatoes or the peelings.

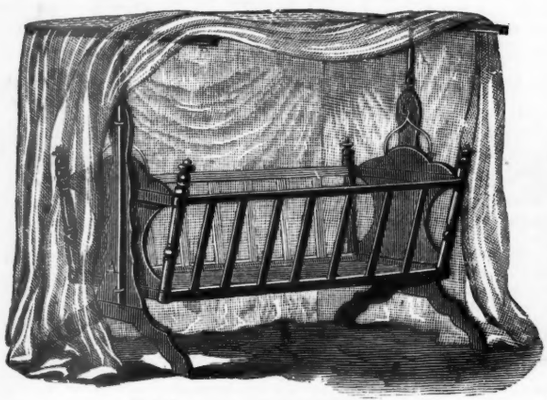


Fig. 1.—CRIB WITH MOSQUITO NET.

Mosquitoes and Flies—Prepare for Them.

There are few places, at least few where one would care to live—that are quite free from mosquitoes and flies. City people seem to think that, as a matter of course, those wo live in the country must have half the pleasure of existence destroyed by mosquitoes, and usually the first question city folks put to us about our country home is: "do you have a plenty of mosquitoes?"—Then we have the grim satisfaction of saying: "We are not troubled by them one-tenth part as much as when we lived in the city,"—and it is the fact. All the annoyance from mosquitoes for all the ten (or nearly that) years we have lived in our present country home, has not been equal to that experienced in a single summer in New York City. In the one case we expected the enemy, and prepared for him. In the other we did not. It is so easy, with a moderate expenditure of time and money, to keep a house quite free from mosquitoes, and nearly so from flies, that we have but little sympathy for those who complain of either. The work may be done by any one who is handy with tools, at a much less expense than to employ a carpenter, but even in the latter case, the outlay is not large. Every door and every window must be furnished with a screen. If you think to economize by leaving certain windows unprovided, those will be the very windows that will be left open, and render the barriers of the rest of no avail. It is best to make thorough work, and from garret to cellar, provide each door and window with a closely fitting frame. Cheap frames, covered with mosquito netting, are better than nothing, but they are so liable to get out of order and to be torn, that if it can be possibly afforded, well made frames, covered with wire gauze, should be provided, as they will prove far cheaper in the end. Still, if these cannot be had, use the other, and make up by extra care what they lack in stability. The frames are often made to set under the lower sash, and can only be put in when the sash is wide open. A far better plan is to have them directly within the lower sash. The frame has on each side a groove, ¼-inch wide, and the same in depth; a strip of wood, ¼-inch square, is tacked to the inside of the window frame, at such a point as will keep the mosquito frame in the proper place. The groove of the frame slides upon this strip, and the mosquito screen is managed without any trouble. Any ingenious carpenter will arrange the details. Wire cloth can be bought in all the cities, ready painted. It may be of any color one fancies; we find a not very dark-blue, the color of which has been subdued with black, making a sort of neutral tint, as inconspicuous and pleasing as any. The doors, and above all the kitchen door, should have frames stout enough to endure the slamming, be provided with very prompt-acting springs, and be no wider than necessary. An ordinary kitchen door is usually wide enough to allow of a double screen-door, as for most uses, one half will be wide enough.

In a house properly provided with screens, no mosquito bars, or nets will be needed. Still, as there are cases in which, for comfort, the bed must be covered with a mosquito net, we give illustrations for some very simple ones. Those who go into the country for the summer, will often find that this article of comfort is not provided; such will find at the furnishing stores a variety of nets or canopies, that are portable and readily adjusted to any bed. Indeed, with a piece of mosquito netting, a few wires and light rods, it is not difficult to provide any bed with a bar. Figure 1 shows how a crib may be sheltered by the use of two light rods supported by strong wires which slip into staples attached to the crib. As scarcely any two cribs are of the same pattern, this attachment will need to be varied to suit the style. The net may be a simple large square piece, to hang gracefully at the corners, or the material may be economized by sewing it together to form a square box. The child's cradle or carriage may be provided in a similar manner. A mosquito canopy, such as is sold at the stores, is shown in figure 2, to give a hint at a similar home-made structure. A frame may be made of light strips of wood—probably the canes used for fishing rods could be used—and by means of wires or strong cords fastened to a central knob. This top is to be covered, and then the mosquito bar tacked to the frame, with plaits to allow of the needed fullness below. This should be open in but one place, and the breadths at this place should lap at least half a yard, to make sure that they will close securely. Such a canopy may be hung by a cord to a small pulley in the ceiling, or marring the ceiling may be avoided by the use of a supporter like that in figure 2, which is a strong arm of wood and heavy wire attached to the bedstead. Instead of this an independent supporter may be used; figure 3 shows one of the kinds sold, and will serve as a hint to devising something that will answer.

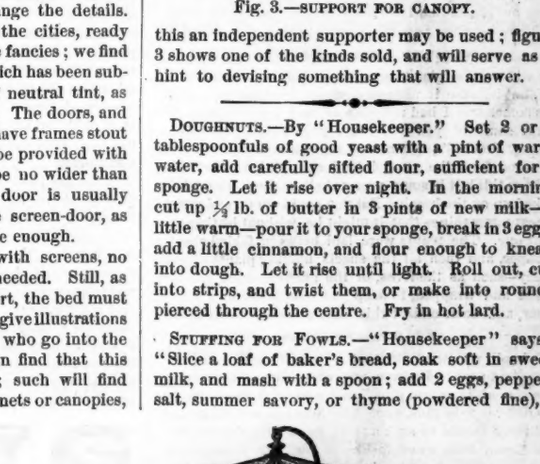


Fig. 3.—SUPPORT FOR CANOPY.

Fig. 2.—MOSQUITO CANOPY FOR A BED.

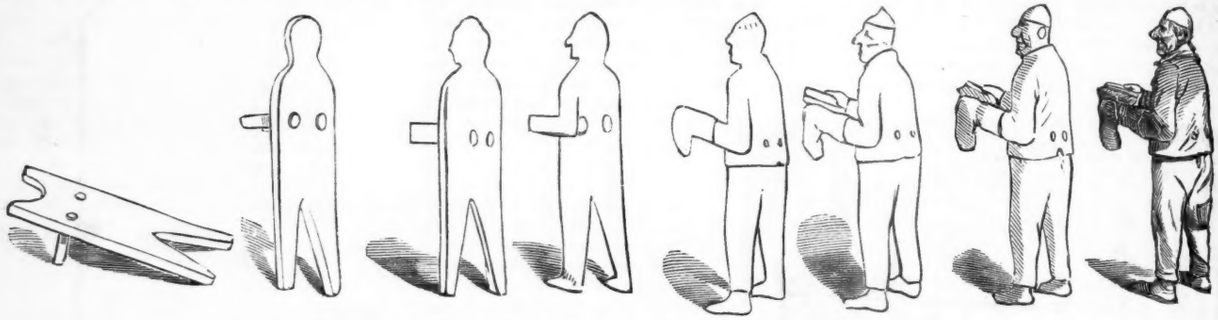
DOUGHNUTS.—By "Housekeeper." Set 2 or 3 tablespoonfuls of good yeast with a pint of warm water, add carefully sifted flour, sufficient for a sponge. Let it rise over night. In the morning cut up ½ lb. of butter in 3 pints of new milk—a little warm—pour it to your sponge, break in 3 eggs, add a little cinnamon, and flour enough to knead into dough. Let it rise until light. Roll out, cut into strips, and twist them, or make into rounds pierced through the centre. Fry in hot lard.

STUFFING FOR FOWLS.—"Housekeeper" says: "Slice a loaf of baker's bread, soak soft in sweet milk, and mash with a spoon; add 2 eggs, pepper, salt, summer savory, or thyme (powdered fine), a lump of butter, the size of a hen's egg. This will be sufficient for two fowls." Another way: Chop or crumble home-made bread fine, moisten with a little sweet milk, and to be enough for two fowls, add 2 eggs, 2 large spoonfuls of butter, 1 even teaspoonful each of pepper and powdered thyme, 2 do. of salt; mix well together.

BOYS & GIRLS' COLUMNS.

The Story of the Boot-Black.

This picture tells the whole story itself, and needs no explanation. Perhaps a boot-black might not like it, but then it is a great deal better to have had an humble origin, beginning low in the scale and working up, than it is to begin high and run down, as many a boy—and many a man too—has done, into something almost as senseless, and not near so useful, as even a boot-jack!



THE NATURAL HISTORY OF THE BOOT-BLACK, ACCORDING TO SOME NATURALISTS.

The Doctor's Talks—How Things are Done—Pins Here and There.

The other day I received from a friend, who lives near the shores of the Mediterranean Sea, in the south of France, a large parcel of botanical specimens, which you know are plants that have been carefully dried by pressing them between papers. Upon opening it, I found it

CONTAINED A GREAT CURIOSITY,

one which I was glad to see, because it is curious in itself, but because it reminded me of "old times," as it was something I had not seen since I was a child. No doubt some of you will think it is a fine plant from "sunny France"; others may guess that it is a brilliant sea-weed from the great inland sea; still, another will perhaps think it is some pretty shell that my friend had picked up on the beach. But you could go on and guess a great many things that it might be, without hitting the right one. The plants were laid between folded sheets of paper, and then all the sheets holding plants of one family—such as the ferns, or the grasses—were put together and wrapped, to keep them separate, in a larger paper, and each end of this wrapper was fastened by

AN OLD-FASHIONED PIN.

This pin was the thing that I thought so curious, and was glad to see! Perhaps you will think of the saying "as near alike as two pins," and wonder if there can be any difference in pins, except in their size and color, and that there should be such a thing as an "old-fashioned," as different from a new-fashioned pin, will no doubt be strange to you. Indeed, pins are in such common use, are so cheap, and so much a matter of course, that it is likely few, old or young, ever gave much thought to them. Forty years ago, pin-making was slow work, and before a pin was finished and ready to be sold, it had to go through a great many hands. In the first place, the wire was cut into pieces, each long enough for six pins; then a workman would take 30 or 40 of these wires, and keeping their ends even, bring them against a grindstone, where he ground each to a point; by keeping the wires rolling in his hand, he managed to point this number at once and all alike. The ends of these long wires being pointed, enough to make a pin was cut from each end, and the grinding continued to point the wires anew: the pointed ends being cut from these, the wires would be left only long enough for two pins; these were ground at each end, cut in two, and the workman was then ready to start with another lot of long wires, and go on as before—one man doing nothing but grind pin-points all his life. Here were the pins with points, but with no heads, and to make these and put them on, was the work of other men. First the heads must be made, and this was done by taking a piece of very fine brass wire, and coiling it closely around a steel wire the size of the pin; this made a coil like a spiral spring, which was then cut into pieces of two (sometimes three) coils each, and these were the heads. Each headless pin had its blunt end pushed into the hole in one of these pieces, and this was held in its place by giving it a blow with a small hammer; after a while an improvement was made by fixing the hammer to work with the foot. When the pin was finished, its upper part was like that shown in figure 1, which is magnified, to show its shape, and below is a view of the head as it appears when looked down upon. What slow work it was, when every pin, even the smallest, had to go through all these operations; in those days it could be said of even the smallest, that it took

FOURTEEN MEN TO MAKE A PIN!

This was the kind of pin in use when I was a youngster, and the kind that I found such a curiosity when I found them in the parcel from France. One of these French pins had its portrait taken, as seen in figure 1, which is not a "full length." I well recollect what bother they made by losing their heads, but the worst was, that in pushing a dull pin, or in thrusting one into some hard or thick cloth, the head, not being securely fastened, would slip, and the blunt wire would often be forced into the thumb, and hurt badly. With all their faults, these were the only pins to be had until about 40 years ago, as it was not until 1836 that

PINS MADE BY MACHINERY

came into use. A pin-machine is a wonderful thing. The wire passes into the machine at one side, from a reel upon which it is coiled—there is a great deal of clickety-click, and the completely made pins drop out at the opposite side, quite as fast as you would care to count them. You will agree with me that this is very wonderful, when you think that this machine of iron and steel does, and more rapidly, the work of a dozen or more men, with but one man to attend to it—indeed, one man can look after several machines. Not only is the work done much more rapidly, but much better. I can not describe the machine, but it works in this way: the wire, as it passes in, has a bit cut off of the proper length, this is held—by a "hand" of the machine itself—against a wheel that goes round very quickly, and acts like a file, which points the pin; then the piece of wire goes to a *die*—a piece of steel of the right shape, where the blunt end is powerfully squeezed, to make the head, and when this is done, the pin drops out, all complete. Pins thus made are solid-headed, all being in one piece, as in figure 2, which shows the upper part of a pin, and below is the head as it appears when you look down upon it. You see that the head can not slip off and get lost, or be pushed off to the injury of the hand, because it is a part of the pin itself. You can understand why these old-fashioned pins interested me, as they reminded me what a great improvement had been made in one of the conveniences, if not one of the necessities, of every-day-life. I do not know if pins are still made in the old way, or not, in France, but I presume that they are, as those which came to me looked bright and new. We may take pride in the fact that this great improvement was made by an American, or rather several Americans, for several worked at the pin-machine before it was as perfect as it is at present. How much thought and study it must have taken, to so fix and shape iron and steel that it would perform such delicate operations better than many hands! But there are some other things you would like to know about pins. They are made of brass wire (some very poor ones of iron wire), and yet they are white, and you wish to know how they are made so. When the pins drop from the machine, they are put into a barrel, which is fixed to turn rapidly on its axils; some saw-dust is put in with the pins—pecks—thousands of them, and the barrel set to whirling; as this goes humming around, the pins get a terrible shaking up; they rub against one another and against the saw-dust, until after a while they are scrubbed clean and bright. Then the pins are put into large kettles, a layer of pins, some plates of block or pure tin, more pins, and more tin plates, until the kettle is full. Water enough to cover the pins is put in, with a little nitric acid, and the whole set to boiling; after they have cooked for about three hours, the pins will be found to be no longer brassy, but quite white; the acid has dissolved a little of the tin, and then deposited it upon the pins, so that each one is covered with the thinnest possible coating—a mere film of tin. This, thin as it is, answers very well, for you know that pins will stand a great deal of wear before they show that they are of brass. The pins go from the kettles into the barrels again, with hot saw-dust, and they are whirled and tumbled over for a while, when they come out bright and polished, and ready to be

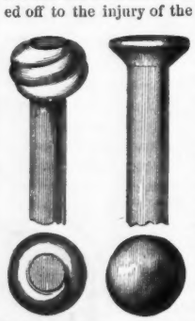


Fig. 1. PINS. Fig. 2.

STUCK INTO THE PAPERS.

For some time after pins were made by machinery, they were put into the papers by the hands of children, but this was too slow altogether. When a machine is needed in this country, it is very sure to come, so a pin-sticking machine was invented, then another, until at last the needed machine was produced, and the one now used, also invented by an American, is even more wonderful than the machine that makes the pins. All that is needed is, to throw the pins into a hopper, supply the paper, and the machine does the rest.... I don't think that my friend in France had any idea, when he stuck his pins into the parcels, that it would lead to so long a talk to children all over the world. But we can not foresee what may come from our slightest acts.—THE DOCTOR.

Aunt Sue's Puzzle-Box.

We will give a few words of explanation, this month, concerning *Positives and Comparatives*. Most comparatives are formed by adding *er*, as high, higher; sweet, sweeter; black, blacker; short, shorter, etc. So that, when we make puzzles on "positives and comparatives," we select words terminating in e, r, or having the sound of er, but which need not really belong to any adjectives at all; as, for example, "scour"—take off the *er* sound and what do you leave? "Scow." Is that anything? Yes, a boat; so that that will make a first-rate "positive and comparative puzzle."—Positive, a boat (scow); comparative, to clean (scour).—"Stammer." Take off the er and what is left?—"Stam." Is that any word?—No. That will not do, then. Now if you look at the answers published in the April number, you will find weight, waiter; cent, center; pond, ponder; gnu, newer, and sleigh, slayer; all very good words for the purpose. With this explanation, I hope you will have no difficulty in guessing the following

POSITIVES AND COMPARATIVES.

1. Positive—correct; comparative—a scribe.
2. A support—fitting.
3. Part of a ship—a ruler.
4. A boy's name—a Southern State.
5. A girl's nickname—to purvey.
6. A rascal—to scud.

(The positive and comparative in each line, understood.)

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

SPECIMEN ENIGMA.—Look before you leap.

ILLUSTRATED REBUS.—(By an unfortunate position selected for this picture, some puzzlers mistook it for the "prize enigma," which enigma was on the next page). A rose would smell as sweet by any other name.

PRIZE ENIGMA.—(To be answered in July.)

SIMPLE ENIGMA.—Live within your income.

The "liquor agent's account" has been variously answered; by the majority incorrectly. J. H. B. sends the most terse answer, thus:

"1st.—The agent owes the town
2d.—In money $50.23—in liquor $31.37.
3d.—The town loses $8.11.

M. J. REID tells us more about it, and as so many have taken an interest in the sum, we cannot do better than quote from his letter: BROCKVILLE, ONTARIO, April 2d, 1877.

Dear Aunt Sue: * * * * I have given it (the account) to several of my friends, and they nearly all do it in different ways, and get different answers, the trouble being, in my mind, that they mix up the cash and the liquor; but I contend that, as the agent was simply an agent, his account with the town has nothing to do with the stock on hand when he took office, or the stock on hand when he left, as he did not

contract to make money or lose it for the town, but simply to do the business, win or lose; whether the town made money or not is quite another question. The agent's statement, then, would be as follows:

AGENT IN ACCOUNT WITH TOWN.

Dr.—To cash received on taking office	$32.17	
" " from sales	102.97	
		135.14
Cr.—By paid for liquor	59.91	
" salary	25.00	
" balance due town	50.23	135.14

And the town would find that upon taking stock they had lost $8.11 as below.

On hand upon commencing business.—Cash	32.17	
Liquor	57.54	89.71
On hand when agent went out of office.—Cash	50.23	
Liquor	31.37	81.60
Loss to town		$8.11

Hoping that I have not taken up too much of your time in giving such a long answer to a simple question in book-keeping, in haste, I am etc., etc.

If you want a more exhaustive (not to say exhausting) statement, you can study the following:

Dr. STOCK ACCOUNT. *Cr.*			
To loss	$ 8.11	By cash	$32.17
Balance	81.60	" mdse	57.54
	$89.71		$89.71

Dr. CASH ACCOUNT. *Cr.*			
To cash on hand	$ 32.17	By mdse	$ 59.91
" received	102.97	Expenses	25.00
		Balance	50.23
	$135.14		$135.14

Dr. MERCHANDISE ACCOUNT. *Cr.*			
To liquor on hand	$ 57.54	By cash	$102.97
" cash	59.91	" liquor remaining on hand	31.37
Balance	16.89		
	$134.34		$134.34

Dr. EXPENSE ACCOUNT. *Cr.*			
To salary	$25.00	By loss	$25.00
Cash			

Dr. PROFIT AND LOSS ACCOUNT. *Cr.*			
To expenses	$25.00	By mdse	$16.89
		Balance	8.11
	$25.00		$25.00

By a "glance" over these five accounts, the transaction may be kept as "plain as a pike-staff."

Yours, etc., 150 Macon st., Brooklyn.

Besides the before mentioned names, the account has been correctly rendered by T. M. H., G. W. Y., G. P. B., Fred. M. N., J. W. C., G. H. N., Lucius E. B., G. E. Bunwell, Mrs. Theodore D. G., J. A. L., J. H. C., J. M. B., F. W. P., G. H. Warner, A. F. S., Macon Street, Warren L. F., Ed. H. S., Frank P. D., Mount Vernon, and Mrs. J. G. T. April 18th, 1877.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Doctor's Correspondence.

That is right!—When boys or girls do not understand, let them ask. When one knows all about a thing himself, he may in telling others about it, forget some little point, or fail to describe it so as to be clearly understood. Here is Master Charles M. E., of New York City, who would like to try the

PIANO KALEIDOSCOPE,

which I described last month, only he does not quite understand how it is done. Well, Charlie, let me try again,

Fig. 1.—PIANO KALEIDOSCOPE.

and this time see if an engraving will not help. Let figure 1 represent your piano, as you stand looking towards the end. When you open the piano, the part that lifts is in two pieces, one of which goes straight down in front, and is hinged to the piece which is directly over the keys, and that again, is hinged to the larger part of the cover, which usually remains shut, and in its place. Ordinarily, in opening the piano to play, these two hinged pieces fold together, and lie flat upon the other part of the cover. To make the Kaleidoscope, you do not let the covers lie down flat, but prop them up with books or something else, as shown in the engraving at *B*. The piano cover being highly polished, the underside of the movable part *A*, and the surface of the fixed part, *C*, act exactly like the two mirrors of blackened glass in the kaleidoscope. But as you have no tube to put your big mirrors into, you must hang a cover, such as a shawl, all along the open space, represented by the book, from one end of the piano to the other. Having done this, I think you will understand, from the description given last month, how to operate it... All the letters do not come from youngsters, for I sometimes find in those from older persons things that will interest you. For instance, a gentleman in Maryland sends specimens of

AN INSECT THAT BUILDS A STONE HOUSE.

A box came with some specimens, and a letter asking what they were. I wrote and told him about them, but I give you, what I could not send him, an engraving of one of them. The box was full of little tubes of the size and shape of that in figure 2. Each tube was made up of little bits of stone, small pebbles, which were put together, and as nicely fitted as the stones in a well built wall; they were fastened together by a cement that water would not dissolve. Each of these tubes was built by an insect, to serve as its house; or, as it is carried about by the creature, it is more like a great coat. As soon as they came, I put the tubes into water, but the insects were all dead, so I have to borrow the picture of the builder of this pretty mason work, fig. 3, from Mr. Packard's book. I have told you so many times, that I hope you remember it, that the different states of an insect are 1st, the egg—2nd, the *larva*, which comes from the egg; we know some kinds of larva as caterpillars, and others as grubs and maggots; it is in the larva state that the insect feeds most, and makes its growth; after a while it goes to rest, and becomes 3rd, the *pupa*, or chrysalis, one kind of which is a cocoon, and sooner or later there comes from this, 4th, the perfect insect, usually the winged form, such as we see in the butterfly, the beetles, and all other winged insects, including the house-fly and mosquito. Now I hope you will recollect this about insects, as I shall not repeat this again—at least not this year. Well, the fellow who builds this mason work, is

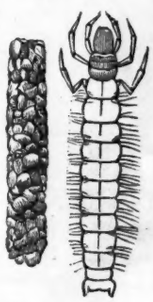


Fig. 2. Fig. 3.

THE LARVA OF A CADDIS-FLY,

and is shown in figure 3. You must know that the larva of many winged insects pass their lives in the water; the well known mosquito does this, and the "wrigglers" you see in water that stands a while, such as that in a rain-water cask, are the larval form of our musical friend the mosquito. The larva of the Caddis-fly passes its life in the water. It has a pretty hard head and front, but the rest of its body is very soft, and as it can not move very quickly, it would fare poorly, did it not build a case to protect its long and soft body. There are several Caddis-flies, and their larvæ (plural of larva), do not all build stone houses. Some prefer straws, small chips, and twigs, for a covering. Some use dead leaves, others build their cases of little bits of moss, and one would never suspect that there was an insect inside of the little tuft, did he not see it travel off; then there is one fellow that hunts around for the empty shells of little fresh water animals, and builds its case of them. All of these are more frequent than the stone-building one, which is put down in the books as belonging in Labrador and elsewhere far north, and I was surprised at seeing it from so far south as Maryland. The insect, when first hatched, is very small, but young as it is, it starts its case, and as it is not built, as boys' clothes are cut, "to allow for growing," it has, as it increases, to keep on adding to the case. After it has reached its full size, it finds a safe place, closes up each end of its case by spinning some bars, and remains a while as a pupa; at last it comes out as the winged insect, or Caddis-fly. As the perfect insect of this stone-mason Caddis is not known, I cannot give you its portrait; but the Caddis-flies generally, are much like the Dragon-flies, or Darning-needles, though their bodies are not so long. You may not find these stone-builders, but in most slow streams, if you watch carefully, you can find those that build cases of other materials. But before leaving the Caddis-fly I must tell you how a lady in England

MADE AN INSECT DO ORNAMENTAL WORK.

She caught a lot of Caddis-worms, and gently pushed them out of their cases into a dish of water. Of course the insect set about hunting for material to make a new case. The lady supplied it with—what do you suppose?—small glass beads of different colors! Being the only things they could find, the poor Caddies went to work, and in time had very gay cases of variously colored beads, all nicely cemented together. Very pretty they must have been, and I was very sory not to find a single one, of several dozen sent me, that was alive, as I much wished to try the experiment with the beads. It is not at all likely that the Caddis-worm would use beads, no matter how plenty they where, if offered to it in the brook, for it would know that they would make it all the more showy and readily seen by fishes and other animals. All their covering are intended to

HIDE THEM FROM THEIR ENEMIES.

It is curious to notice the various ways in which insects, especially those that move slowly, are disguised, either by their color or form, so as to be less noticed by birds. On another page is given an account of an insect, very destructive to trees in one place, which is called a Walking-Stick, or Stick-bug, as it looks so much like a twig that it would not be noticed, unless seen in motion. It is a

Fig. 4.—WALKING LEAF.

very slow traveler, although so well supplied with legs, and no doubt this resemblance to a stick cheats the birds. In the East Indies there are several insects called "Walking-Leaves," one of which is shown in figure 4. They look much like a leaf in form and color, and are evidently thus disguised that they may the better hide from their enemies among the leaves....Jenny L. has had a present of a Cologne bottle with

HER NAME ENGRAVED UPON THE GLASS,

and of course wonders how it is done. Engraving is now a very popular style of ornamenting glass, and it is a beautiful one. It is not uncommon, for those who can afford it, to have their goblets and other glassware ornamented with such designs as they may select, and marked with their own initials, and most of the large stores that deal in such articles keep engravers to do this work. The usual bright surface of glass, when rubbed with something harder than itself, will become dull. It may be scratched and made dull by the use of a file or by rubbing it with sand; in engraving, the material used is emery, a stone much harder than ordinary sand, and for some work, diamond dust is used. The engraver has a sort of lathe, as in figure 5, to which he can attach wheels of various sizes, and by means of a treadle, worked by his foot, this wheel can be made to revolve very rapidly. The wheels are from an inch to six inches across, according to the work, and are made, usually, of copper of different thicknesses. The edge of the wheel, like that in the engraving, is smeared with oil and fine emery, the oil being used to make the emery stick to the wheel, and

Fig. 5.—ENGRAVING ON GLASS.

the wheel is set to going very rapidly. If a goblet, or any other thing of glass, is brought against the wheel, its surface will be scratched at once, and you can see, that by turning the goblet a line can be scratched or engraved quite around it. Straight lines are but little used; the engraving is usually in most graceful lines, and vines and other figures are represented. To understand how these are made, fasten a lead pencil so that it can not move, and then try to draw or write something by moving a card against the pencil. You would find it very difficult at first, but could soon get the knack of moving the card, so as to write your name. The wheel is like the fixed pencil, and the glass, like the card, must be moved in order to form the engraving. You can see that it requires much practice and skill to engrave on glass nicely, for, of course, a mistake or wrong line cannot be rubbed out.

Aunt Sue's Chats.

AMELIA.—Your friend need not necessarily have meant "a guard ring"; there are "regard" rings, so-called, because the initials, or first letters, of the different stones as purposely arranged, spell "regard"—thus, Ruby, Emerald, Garnet, Amethyst, Ruby, and Diamond.

WATERTOWN.—They have "the right" to have the child christened "Nettie," if they choose to exercise it. It is a matter of taste; should prefer to have her named Antoinette, and use "Nettie," as a pet name. Nanette "means" Little Ann; Beatrice, blessed; Theodosia, God's gift; Kathleen, little darling; Helen, light; Ida, happy. Many other names have a pleasant meaning.

J. W. W.—I can only give you such information concerning "the number of visitors to the Centennial," as I glean from the papers, not being "posted" officially. The number of cash admissions from May 10th to Nov. 10th, was 8,004,274; free admissions, 1,906,692; Total, 9,910,966. Total cash receipts, $3,813,724; though why it should not have been $4,002,137, if the admission was 50 cents, my arithmetic does not enable me to determine.—[Aunt Sue forgets that there were several 25c. days.—ED.]

MABEL S. W. wants to know what "cutting up didoes" is derived from. It has quite a classic derivation from Queen Dido herself. When she was about to found the city of Carthage, she bargained for as much land as could be contained within an ox-hide. The contract being concluded, the cunning Queen cut the hide into a string long enough to encircle all the ground she wished to procure for the site of the new city. Hence arose the phrase of "cutting a Dido," and its application to sharp practice and eccentric, unexpected proceedings.

MRS. M. A. B.—Bryant is "the oldest," being 80; Longfellow 70; Whittier 69; Holmes 68; and Lowell 58.

IN AMBIGUO.—I have always heard (J. G. Holland's poem of) Kathrina pronounced "Kat—reen--a" (or "Kat—reener" without rolling the final r); the h being silent, as in "Thisbe" (*Tisby*).

MISS X. Y. Z.—Had you read my "Chats" in the April number when you wrote your letter?

Thanks for letters, puzzles, etc., (received up to the 18th of April) to L. N. J., Emma R., William M., Kate M., Blackwell S., Florence M., William M., Jr., F. P. S., J. H. P., E. A. Y., C. A. T., Geo. E. L., Willie (Bailey), Maggie S., E. B. P., F. A. P., R. M. McD., Whe (J) atley (W-), J. R. J., M. A. R., Gertie D. W., Joe L., W. Carlo, Lollie, G. A. C., Jesse M., J. W. B., and M. A. C.—If I have failed to notice any letter written to me before the date mentioned above, it is probably because it was sent to 245 Broadway, N. Y., (where I *don't* live) instead of to Brooklyn (where I *do* reside).

The Pet Bird.

You will at once say that this is not a home picture—and you will be right. Why is it not a scene at home?—You have no doubt noticed that the part of the house in the distance, the piggin or one-sided pail, and the big water-jar, are all such as belong to another country, while the dress of the young Miss is quite unlike our present fashions. Having a bird for a pet, is much more common in Europe than with us, as they have many more song birds than we do, and the people take much more pains in raising and taming them. Indeed, there are parts of Europe where the people get a large part of their living by raising and training birds; they are not pets to them, as they do not care for them, because they are fond of them, but for the money they will bring; they only raise the birds to be pets for others. You perhaps will wonder that the bird in the picture does not fly away. It is no doubt a Bull-finch, which becomes very tame, and so fond of the person who cares for and feeds it, that, though allowed its liberty, it will not go off to join its wild companions. It does not seem wrong to keep a bird of this kind which stays a captive when it could go off if it wished. In some parts of Europe these birds are taught to whistle tunes; if taken early, it is not difficult to teach them one tune, which they will whistle very correctly, but it is difficult to teach them two airs, and have them keep them apart. A bird that will perform more than one air well, brings a very high price. The Bull-finches are also taught to raise a little bucket of water when they wish to drink, and to pull up a car of seeds when hungry. The Canaries, though they cannot be taught like the Bull-finch, often show much attachment to their owner, and are very pretty pets, though some are much more intelligent than others. We were in a depot not long ago, where the man who kept the refreshment place had three Canaries; these were allowed to fly about at will for a part of the time each day; they would go where there was all the noise and din of rushing steam, the screams of whistles, and among the crowds of passengers, without getting at all confused; they would come back whenever the owner whistled for them, as obediently as a well trained dog. Our pet birds, if we except the Mocking-bird, which is never much of a pet, generally come from other countries. Our birds in their wild state seem to have very knowing ways, and no doubt could be tamed and taught as well as others, but very few seem to have given attention to them. After all, we think it as well that our own birds should be left to the enjoyment of their liberty. We can, if we take pains, make them very good friends without confining them in a cage, as the correspondent shows who wrote so pleasantly last month about "My Pet Birds." If we keep the cats away from them, and do not allow any one to frighten them, there are many birds that will come to us of their own accord. If we would keep pet birds in the house, it seems more kind that they should be those that have been bred for many years in cages, and which, never having known liberty, are perfectly contented to live away from the woods and fields, which our own birds, when caged, seem to pine for. No one should keep pet birds, or indeed pets of any other kind, who is forgetful and cannot attend to them regularly. A day of neglect may bring much suffering to the poor little captive, who depends upon you for food and water. Recollect, that the keeping of a living pet of any kind, brings with it an obligation or promise to care for it regularly, as you place it where it can not help itself.

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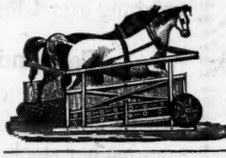

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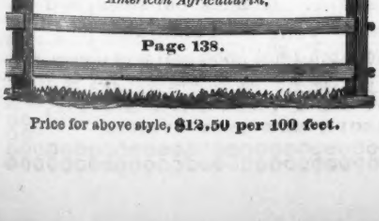

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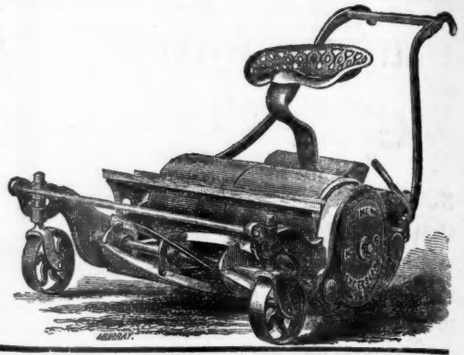

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A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

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Steam Engines, Horse Power and Threshers of all kinds. Also, Ploughs Cultivators, &c., &c.

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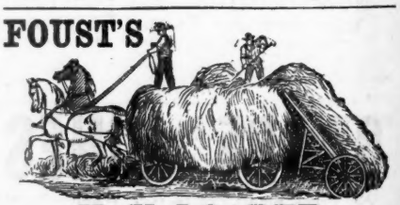

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The greatest amusement of the age! Recreation at home for all ages and for all seasons! Crandall's Heavy Artillery is made up of a large Cannon, complete, which throws a 1¼-inch Rubber Ball to the distance of 25 feet or more, and Sixty Blocks (Red, White and Blue), to build up Fortifications, also a Company of Soldiers, with Officer and Flag, to Garrison the Fort. The Game is to beat down the Fort by the use of the Big Gun. Rules, Illustrations of a variety of Forts, etc., accompany each box containing the set, and the box is 18 inches long, 6 inches high, and 8 inches wide.

Price per Set, $3.00. *Expressage to be paid by the recipient.*

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No more long faces and no more tears over A B C! Here we have amusement and instruction combined. Each box contains twenty-seven little men, each representing a letter, with arms, legs, and jolly faces. This set of Blocks is susceptible of more changes, and a greater variety of forms and combinations than any Spelling Block ever offered to the public. The Pieces are durable, the Letters plain, the Faces mirthful, and the Amusement afforded by them unlimited. They please while they instruct, and are a source of enjoyment to young and old.

Price per Box $1.00; *by mail, prepaid,* **$1.50.**

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This beautiful and interesting toy is regarded by Mr. Crandall as one of the best of his inventions for the little folks. It is made up of two figures, John Gilpin—whose highly colored dress is specially attractive to Boys and Girls—and his Horse, which intelligent animal performs a very important part in the illustration of Gilpin's famous ride.

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Here is something that will make glad every little boy that gets it. The Toy Horse is about 6 inches in hight to the tops of his ears. He stands upon a four-wheeled base, all ready to be set in motion by his owner. He is made up in pieces and can be taken apart and laid snugly away in his box.

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One of the funniest and most amusing of the low-priced toys. The lively little All-Right throws himself into a great variety of positions as he whirls around the "wheel." Can not be sent by mail. For sale by Toy Dealers generally.

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Full of fun and frolic, and most brilliant in costume. These are among the most fascinating and ingenious toys ever invented. The number of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator.

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Can be made into forms of almost endless variety.

The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

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These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

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Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

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With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid,* **70 Cts.**

CRANDALL'S ALPHABET-BLOCKS.

Red, White, and Blue.

Tasteless, odorless, and water-proof. The letters are on red, white, and blue ground. All children are pleased with them.

Price 75 Cts.; *by mail, prepaid,* **$1.00.**

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the trade will be supplied on liberal terms.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 209.

Treatment for Lampass.—"R. O. M.," Pope Co., Ark. For a horse that is troubled with lampass, take a sharp knife and cut the swollen parts in short slight gashes, one inch apart, and about one inch long. Then make a strong decoction of white oak bark, and swab the mouth well two or three times a day. It is a sign of indigestion, and it would be well to give a pint of linseed oil daily for two or three days.

The Angora (Mohair) Goat.—"M.," Russelville, Ark. The Angora goat will do very well in Arkansas. It succeeds well in Georgia. You can procure them of Mr. Richard Peters, Atlanta, Georgia, who will give you any needed information about them.

Use of Bones for a Fertilizer.—"C. D. E.," Healthsville, Va. It is not advisable to reduce bones with oil of vitriol, unless one has experience and every facility for doing this dangerous work. Bones may be ground in any steel mill. The Bogardus Eccentric Mill is extensively used for this purpose. The bones should be ground finely to be of greatest service.

Swelled Leg in a Horse.—"M. M. G.," Blair Co., Pa. When a cut or a bruise in a horse's leg is healed too quickly, and before the inflammation has disappeared from the wounded parts, the limb will often swell and become hard. This may be caused by absorption of the suppurated matter which ought to have been discharged from the wound. The remedy is to give purgatives, the best, probably, being one ounce doses of hyposulphite of soda, with alternate doses of half an ounce of nitrate of potash. Cold astringent lotions and bandages on the limb may be useful, or blistering may be needed. If the horse is valuable, it would have been wise in the first place to have employed a veterinary surgeon. Hot tar should not have been used on it.

Warbles.—"A Farmer." The lumps found on the backs of cattle at this season, each contain a grub, or larva, of the ox gad fly, (*Œstrus bovis*). The lumps should be squeezed to force out the grub, which is to be destroyed. If a drop of sweet oil is placed in the opening, the grub may be removed much easier. To prevent them, mix a pound of lard with a teacupful of kerosene oil, or one dram of carbolic acid, and rub the mixture on the backs of the cattle, in July and August, when the flies are laying their eggs.

Gas Tar as a Preservative of Wood.—"S. S. B.," Blair Co., Pa. It is stated by persons who use gas tar extensively that, when fresh, it contains an acid which is destructive to wood. When this acid is neutralized by the mixture of half a bushel of freshly dry-slacked lime with a barrel of the tar, the neutral tar is then considered as an excellent preservative of wood that is coated with it.

Manufacture of Potato Starch.—"J. F. C.," La Crosse, Wis. An illustrated article, describing the manufacture of potato starch, was given in the *American Agriculturist* for September, 1876. There is no work specially devoted to this manufacture, and no work that we know of gives so full an account of this business as the article referred to.

Wire-Worms.—"G. S. W.," Selina, Ohio. Those you send are undoubtedly the larva of some Click Beetle. You ask why you find in a field "a bushel of wire-worms, (children), and not one Click-Beetle, (parent)." The habits of these insects have not been sufficiently studied. Writers on insects say they pass, "several years" in the larva or wire-worm state, but how many does not seem to be known. If they are three or five years in this form, you will not see the perfect insect every year. All the Click-Beetles are not the large gray ones, with black "eyes" or spots, but some are small, and not at all conspicuous, slender, and dark-brown, and would not be suspected of "click" until tried. The wire-worms are very fond of potatoes, and in England, (where they have similar insects), these are used to trap them. A potato through which is stuck a long stick, is buried where the worms abound; the stick shows where the potato is buried, and allows it to be taken up at intervals, when the wire-worms that have collected can be destroyed.

Honey Locust and Catalpa Seeds.—"W. F. W.," Iowa. These seeds need no preparation before sowing. Those of Honey Locust, if of the previous year's growth, have with us germinated almost as readily as beans. If old, we should scald them. Catalpa seeds are very thin and light, and should be covered but slightly; do not sow until the ground is warmed, in a light rich soil. We fear that the Catalpa may not be hardy with you, but do not know positively.

Seed Distribution.—In the course of a year we get some strange letters, but quite the strangest of late, is one from a lady in Indiana, who "has been informed" that we were "the Government Commissioners for the distribution of foreign seeds," and gives us a list of those she wishes, without even a stamp to pay postage. No, we thank you, madam, we have "no connection with the shop over the way." Mr. F. Watts, Washington, D. C., is seed peddler in general. We do not know what the future may have in store for us, but we haven't yet come to running a government seed shop.

Export of Horses.—The export of live animals from the United States and Canada, is rapidly increasing, and bids fair to become an extensive and profitable business. Already hundreds of horses are annually shipped from America to Great Britain, and to encourage the business, an association called the "British Empire Horse Supply Association," has been formed with a Million dollars capital. The purpose of the Association is to import and export both horses and cattle, and the chief source whence the supply is expected is North America.

Exports of Agricultural Produce.—The total exports of agricultural produce for the year 1876, amounted to $490,969,740. Of this large sum grain and flour amounted to $132,085,740; meats to $62,156,223. Cotton amounted to $187,662,425, or less than the value of breadstuffs and meat alone. The value of mined and manufactured articles exported in the year, was $146,482,428, or less than one-third that of agricultural produce. This is an encouraging exhibit, and it is more encouraging still to know that there is a probability of a large increase in this export business.

Weight of Dressed Mutton.—"L. L. B.," Springfield, Ill. A well fatted sheep will give 57 to 58 lbs. for the 100 lbs., if the fleece is not more than three months old; a sheep in good store order will dress 50 lbs. to the 100; these estimates do not include the head, heart, or any part of the valuable intestines.

A Puzzled Jury.—"G. D. A.," Poughkeepsie, N. Y., sends an account of a case which came before a jury, but which was too much for them. A cow had a dead calf on the 1st of Nov., and the owner put with her a 2-days-old calf of another cow. A short time after the cow was sold as a new milch cow, with a calf, but nothing was said about the calf being a foster one. A month afterwards, a badly decomposed fœtus was taken from the cow by the purchaser, who suspected fraud, and sued the seller for the return of his money. The question which the jury could not decide was, whether a cow could carry one of a pair of twin calves in a dead state for four weeks after the birth of the first. Such a thing has occurred frequently, and is not at all strange. What the equities of the case are, however, we do not feel called upon to decide. If we had sold the cow, we should feel bound in honor to return the money, unless at the sale the usual conditions were announced that the animals were sold 'with all faults and errors of description.'

Spring and Winter Barley.—"C. J.," Rockbridge Co., Va. The seed of barley sown in the fall will grow equally as well if sown in the spring. It will be somewhat later in ripening than the fall sown.

Profit of Breeding Horses.—"Young Farmer," Lancaster Co., Pa. There is probably no more profitable branch of agriculture than horse-breeding, if the proper kinds are kept. If not, there is scarcely a more unprofitable business. A few poor horses will soon "eat their heads off." The demand is now for horses that are strong, large, and active, fit for carriage horses, or for active service in cities. These come from roomy rangy mares, and a well-knit stout stallion, of good trotting family. The mares will earn their feed by farm work, and the profit will be in a colt every year. Breeding of stock takes less from the soil than grain growing.

What Constitutes a Thoroughbred?—Prof. G. E. Morrow writes, in reference to a reply to this question in the *American Agriculturist* for May, that we "are in error in the statement that five crosses entitle an animal to entry into the Short-horn Herd-Book. For the English Herd-Book four crosses entitles a cow to entry, making five, of course, for a bull. In America, the rule is supposed to be more strict. For entry in the American Short-horn Herd-Book, animals must trace to imported stock or to those already recorded; for the Short-horn Record, Alexander's, they must trace to imported stock on both sides in all cases." Here is a distinction without a difference, and fails to show our statement to be an error. If in the English Herd-Book four or five crosses entitles an animal to entry, and entry in that herd-book entitles, on importation, to entry in the American Short-horn Herd-Book, then it is as we said. The question is, what makes a thorough-bred, and as five crosses make a thorough-bred in England, and such an animal imported is accepted here as thorough-bred, what is the difference between a thorough-bred and an animal having five crosses.

An unusual Occurrence with Pigs.—"N. J. H.," Hillsdale, Ill., writes that five of his sows have already had pigs, but that nearly all of the pigs have been wrongly presented (breech presentation), and consequently only seven of them have been saved. There is nothing extraordinary in a wrong presentation, but that it should be generally the case with a number of sows on the same farm, would lead to a supposition that some accident must have occurred. Very violent action, such as chasing by a dog, might cause such an accident in some; but we can offer no explanation of the fact that nearly all were affected.

Poultry Manure for Tobacco.—"W. M.," Lock Haven, Pa. Poultry manure or other concentrated fertilizers should be used, so as not to come into close contact with the roots of a plant or the seeds, except in a diluted condition. It should either be mixed with earth before applying it, or it should be scattered over the ground very thinly.

Corn after Buckwheat.—"P. R.," Oshkosh, Wis. There is no good reason why corn should not produce a good crop after buckwheat, if the soil is good. Buckwheat has no injurious effect upon the soil.

Difficulty in Making a Cistern.—"T.," Troy, N. Y.—It frequently happens that in digging for a cistern, surface or spring water enters from the side or bottom, and hinders or prevents success. We have recently experienced such an obstacle, and surmounted it as follows: A floor of hard brick was laid in cement, after spreading a layer of concrete of cement and gravel three inches thick. The water was kept dipped out. This was left to harden for two days, then the wall of brick laid in cement was raised, and a backing of concrete put in, and rammed, but not so hard as to displace the bricks, between the wall and the earth. This was carried up to the surface, and a perfecty water-tight cistern, both inside and out, was the result.

Shepherd's Dog.—We have an unusual number of inquiries for trained shepherd's dogs, but unfortunately have no knowledge of any competent person who makes a business of training them. Any one who would undertake the rearing and training of good dogs, would find ample demand for his animals from the readers of the *American Agriculturist* alone, provided he made the fact known in the usual manner.

How to feed Fodder preserved by Ensilage.—"T. M. H.," Wheeling, W. Va. In the *American Agriculturist* for June, 1875, was given an illustrated article on the preservation of sour fodder in silos. The word "silo" is defined in Webster's Dictionary, as a subterraneous pit for keeping feed. It is precisely the same in the French. The fodder is cut from the silo with a long knife, or a spade, ground sharp, in upright slices, leaving a compact smooth face. A smooth, closely fitted shutter, or several of them, are placed closely against this face and pressed tightly to it by braces against the sides or the floor. In this manner access of air to the open side is prevented.

Grass for Reclaimed Marsh Land.—"T. J. C.," Wood Co., Wis. If the soil of the marsh is yet very moist, Red-top would be the best grass to sow. If it is only moderately moist, Timothy will succeed very well. No clover but Alsike would do well on it.

How to Treat an Injured Foot.—"W. L.," Tallapoosa, Ala. A mule's foot, that has been crushed, may be cured by proper treatment. The mule is by no means beyond future usefulness. Dress the foot with cold water, and keep it bandaged; cut away the torn pieces of horn, and as soon as the inflammation has subsided, dress the wounds with tow or lint, steeped in cotton-seed-oil, to which a little carbolic acid has been added, applying every morning to the wounds, before the tow is used, some compound tincture of myrrh. In course of time the horn which has been removed will be replaced. Of course the animal must be kept at rest.

Composition for Welding Iron.—"W. S. B.," Barnwell Co., S. C. A composition for welding iron at a very low heat is made by Delamater & Co., 13th st., N. Y.

Book on Sheep Raising.—"S.," Terre Haute, Ind. Stewart's "Shepherd's Manual" is the most useful book on sheep breeding and keeping. It contains all the information needed that can be learned from books, and very full and plain directions for all the different operations connected with keeping sheep, with many illustrations. It can be procured of the Orange Judd Co. for $1.50, post-paid.

Wool Manufacturer's Bulletin.—"A. R. S.," Terre Haute, Ind. The Bulletin of the Wool Manufacturers' Association is published quarterly in Boston. This address is sufficient to reach it. It contains much information, of value to those who grow wool, as well as to those who manufacture it.

Salve for Cracked Teats or Wounds.—"T. A. G." An excellent salve for dressing cracks, cuts, or wounds, in cattle, sheep, or horses, is made as follows: Melt together, with a gentle heat, 2 oz. each of bees-wax and rosin, add half a pound of lard, and when melted and removed from the fire, four ounces of turpentine; when this is well mixed and while liquid, stir in thoroughly one ounce of finely powdered verdigris, and continue stirring until cold, and keep in a jar. This should be applied after washing the parts with warm soap and water.

Rye amongst Corn.—"W. H. S.," Peoria, Ill.—If rye is sown amongst corn at the last plowing in July, it will probably head out before winter, and be lost. This is too soon. If the corn is cut as soon as ripe, and shocked in rows 30 feet apart, the field may be plowed early in September, and sown to rye in the usual manner with success. When the corn is moved, the vacant rows may be plowed and sowed also, and although later, these will produce a crop of straw, if not of grain.

Peas and Oats for Fodder.—"C. W. F.," Princess Anne Co., Md. The common northern field pea is the one used with oats for fodder crops. Any kind of pea will do. Tares or vetches are equally useful. The object is to get a heavy burden of foliage and stem along with the oats. Very nearly the quantity of seed used of each when grown separately, may be sown.

Lime for Composting Swamp Muck.—"A. W.," Cecil Co., Md. Lime newly slacked, dry, and in fine powder, is the best material for composting with muck, to prepare it for use. Gypsum is a neutral salt, and cannot combine with the acids of the muck, or aid in decomposing the vegetable matter. The mild lime usually imported into Maryland from the Pennsylvania lime kilns, or oyster shell lime, may be used.

Diseases of Cattle.—"H. F. H.," Hopedale, Ohio. Dr. Dadd's book on Diseases of Cattle, (price $1.50), is one of the best works on this subject. Prof. Law's "Farmer's Veterinary Adviser," is a new and very valuable work. The price of this book is $3.00.

Brewer's Grains not Good for Horses.—"A. S.," Manchester, N. H. Brewer's grains are not to be recommended for horses. Sloppy sour food is to be avoided, as well as dusty feed, such as malt-sprouts. But cows do well on such feed, and for them both the grains and sprouts are useful. A horse requires concentrated and dry food, as its stomach is very small as compared with that of a cow.

Sawdust in Manure.—"Reader," Orange Co., N. Y. Manure made of sawdust for bedding, is not worth so much as that made with straw. It is apt to "burn" or fire-fang in heating, and contains very little of the most valuable component parts of straw. The manure is reduced in value from one-third to one-half.

Hungarian Grass.—"A. S. S.," Northumberland Co., Pa. This should not be sown until June. Half-a-bushel of seed per acre is ample. The crop should be harvested before the seed begins to ripen, and cured in the same manner as timothy hay.

Gypsum on Corn.—"Elmwood," Peoria Co., Ill. Gypsum, or plaster, should be applied to corn, when the plants are about six inches high. A handful may then be scattered about each hill. About 300 lbs. per acre will give one ounce for each hill.

How Peat Muck may be Used.—"S. J.," Bayou La Fourche, La. To use muck as a fertilizer, dig it and let it drain for a few weeks, then compost it with cotton-seed, adding a bushel or two of shell

lime or burned marl to the wagon-load. Keep plenty of muck on the top of the heap.

Chicken Cholera.—"J. C. E.," Morgan Co., Ohio. The cause of chicken cholera is undoubtedly a disease of the liver, and not of the intestines, until these become affected in course of time. To prevent it, the fowls should be kept dry, and have pure water, pure air, and not an excess of wholesome food. Corn, fed continually, is not wholesome; either wheat, barley, oats, or peas, should be given at least once a day. Overfeeding, and forcing the fowls, tends to produce this disease as much as anything. When first taken, a pellet of "blue pill," the size of a duck shot, given twice in one day, followed by half a teaspoonful of castor-oil the next morning, has been found effective.

Paralysis in Pigs.—"J. B," Hosensack, Pa. High-bred pigs, especially Essex and Berkshires, are more subject to paralysis of the hind-quarters than pigs of the common kinds. The disease is due to a softening of the spinal cord, and effusion from the surface of the affected parts, which occasions pressure, and consequent inaction of the nerves which start from the spinal cord. These nerves are connected with the digestive organs and the muscles of the hind parts, consequently these organs and muscles become partially or wholly paralized. When the paralysis is complete, nutrition is suspended, and the animal dies. The remedy is, to apply mild blisters, mustard plaster or spirits of turpentine, to the loins, give one dram doses of nitrate of potash, dissolved in some bran slop, daily, and feed light nutritious food. Keep the animals warm and dry.

Legislating Backwards.—The North Carolina Legislature recently enacted a law, by which any manufacturer or dealer of commercial fertilizers is compelled to pay a license tax of $500, under the penalty of indictment if he should sell, or offer for sale, any fertilizer without having paid the tax. A farmer who may bring into the State any fertilizer in evasion or violation of this law, is held to be guilty of a misdemeanor.

Proper Food for Fowls.—"W. S.," Memphis, Tenn. Corn is by no means a sufficient food for poultry. It is rich in starch and oil, but deficient in nitrogen, sulphur, and lime, all of which are contained in considerable quantities in eggs and feathers. If corn is the most convenient food, it may be used by having some of it ground coarsely, soaked in warm water, and a small quantity of powdered burned oyster shells, or bones, mixed with equal quantities of sulphur, salt, and ground pepper, and some chopped lean meat added to it.

"Brazilian Artichoke."—A correspondent in Iowa asks where the "Brazilian" Artichoke can be had. It is bad enough for the plant to be called "Jerusalem" Artichoke, a name which is a corruption of *Girasole*, the Italian for sunflower, and it has no claims to the title Brazilian. In various works Brazil is said to be its native country, but as we have already stated, it is not known there, and Prof. Gray has shown that there is but little doubt that it is a native of our Western and Southern States. We have noticed that in some Western agricultural papers the plant is mentioned as the "Jerusalem or Brazilian Artichoke"; this supplementary title is needless, and leads to confusion. There are several seedling varieties, differing in the shape of the tubers and the color of the skin; besides the common white, there are purple, red, and yellow kinds.

"One Man's Meat is another man's poison," is an old proverb that is frequently illustrated in our correspondence. Recently we have had a number of letters relating to cultivating, and getting rid of the same grass. We have been asked how to cultivate and how to destroy Bermuda grass so frequently, that this is no novelty, but it seems strange to get letters from Washington Territory, asking how to get rid of "Blue Grass," while within a day or two we have inquiries from Eastern States, asking how to establish a meadow of it. In March we described the Guinea-grass, which is much esteemed in Florida; and letters have come from the South, asking where it can be procured. But a friend in Louisiana has quite too much Guinea-grass, and his letter asks how to get rid of it. All this shows what a wonderful variety there is in our agriculture, and that a plant is valuable or otherwise, according to circumstances.

The Hardin Method of Butter-Making.—The method of setting milk for cream, known as the Hardin Method, in which a close refrigerating closet with ice and deep pans are used in summer, is becoming popular in both large and small dairies. Its economy of room is a great advantage, making the use of a special milk-house or room in small dairies unnecessary. Recent experiments, made by Eastburn Reeder, of Mount Hope, Pa., who has heretofore favored shallow pans, have resulted in favor of the deep pans and low temperature of Mr. Hardin's method, and Mr. Reeder admits the inferiority of shallow pans, as compared with the deep pans. It is possible that the low temperature and close closet of the Hardin system may have some beneficial effect, at any rate the advocates of the deep can system are greatly reinforced by the results of Mr. Reeder's experiments. During the fall and winter the use of ice for cooling, or fire for warming the milk, is unnecessary in the Hardin system, and those who have adopted it will be spared the trouble and expense of these additional appliances to the ordinary method of setting milk for cream.

The Tribune Horticulturally and Agriculturally.—The "N. Y. Tribune" has long been a source of amusement by reason of its horticultural items. A collection of those published during the past six or eight months would be quite as funny as anything in Josh Billings' "Alminax." On March 14 it informs us that "Florists are said to have been 100 years perfecting the Lily of the Valley," which will be news to florists. Some time ago it informed us that "Sago palms, now so much desired for in-door decorations, are natives of Southern Egypt,"—to which we would say, firstly, that, however much the Sago Palm might be "desired," it would be very difficult to gratify the desire, as we do not know of any on sale in the country; secondly, that it is not a native of "Southern" or any other part of "Egypt," and, thirdly, that the plant that this writer is evidently trying to talk about, is not a *palm* at all.—Its agriculture is as droll as its horticulture. It says: "Not in all climates can spring wheat be raised [which nobody can deny]. But the golden grains which lie hidden in the ground through a long and dreary winter, bring forth not the less richly when the glad spring-time comes." That is very pretty talk, but mighty poor farming. We wonder if the "Tribune" folks have the seed of that wheat with "golden grains," and stays all winter in the soil. In the same number with this absurdity it sets forth the value of its Weekly, which, of course, has all the best things of the daily, as a rural paper.—*Later.* The above was crowded out last month, but we do not regret it, as it allows us to add information which "is important if true." The "Tribune" says: "Kale is the most plentiful salad now in the market."—Kale salad! The "Tribune" is the only paper that had the news, and probably the only one in which this could be published.

Heavy Fleeces.—"M. J. P.," Salem Co., N. J. The Merino sheep produce the heaviest fleeces, some of them yielding 18 to 30 pounds of wool, in the yolk. The Cotswold yield the next heaviest fleeces, these being from 11 to 18 pounds. The best market lambs are a cross of Southdown with Merino, and the heaviest lambs a cross of Cotswold with Merino.

Heavy Hogs in New Jersey.—A correspondent from Burlington Co., N. J., gives the following weights of hogs, recently slaughtered in his neighborhood, as follows: Richard Harrison, living near Recklesstown, slaughtered 28 hogs, which weighed as follows: 505, 575, 575, 577, 577, 579, 579, 579, 583, 585, 585, 595, 595, 603, 605, 605, 619, 619, 629, 635, 639, 655, 665, 677, 709, 715, 735, and 749—making an aggregate of 17,338 pounds, and an average of 619 3-14 pounds. Joseph Carter, on the farm of Anthony Bullock, in the same neighborhood, killed 20 head, weighing as follows: 561, 565, 579, 591, 597, 601, 625, 649, 655, 665, 677, 695, 705, 705, 713, 721, 737, 774, 865, and 905 pounds. Total weight, 13,565 pounds. Average, 678¼ lbs. The five heaviest weighed over 4,000 lbs. Some of the last lot were 21½ months old.

Stable Floors.—"A.C.," Franklin Co., Mo. Plank floors are not injurious to horses' feet, if not too slanting. The floor should not slope more than one inch in 6 feet, which will give plenty of drainage. This will not strain the tendons, by throwing undue weight upon the hind legs. But if the rear half is of plank, and sloping, and the floor beneath the fore feet of earth, the front may be made lower than the rear, which will be the best form of floor. No earth floor can be kept clean.

Gathering Lucern Seed.—"C. D. J.," Brighton, Mich. Lucern may be cut for seed at any time when the seed is ripe. It is not cut as clover is, once for hay and a second time for seed, but is kept for cutting fodder or hay for many years continually, and not permitted to seed. It should, if manured, last eight or nine years when thus cut, but if allowed to ripen seed, the plant would probably be exhausted much sooner. The seed for an acre costs only $6 or less; 8 to 12 lbs. being used, at 50 cents a pound.

The American Rotary Plow.—"E. W. D.," Bloomington, Ill. The plow referred to is as yet only an experiment, and we know little of its merits, except from newspaper reports given by interested parties.

Bommer's Method of Managing Manure.—"D.," Bloomington, Ill. The method of making manure described in Bommer's pamphlet, preserves everything of value in the materials used, and saves all the ammonia; it also works up waste materials into a condition for profitable use. The method is applicable everywhere, in the West as well as in the East.

Preserving Corn-Fodder.—"C. G.," Guilford, Ct. The whole process of preserving green-fodder by ensilage, is intended to prevent access of air to to mass. The success of the plan wholly depends upon this. If air is admitted, all is lost. Any plan, therefore, that does not exclude air, will fail. There is no better method than those described in the *American Agriculturist* of June, 1875, and October, 1873. The latter is a very simple, easy, and cheap method.

Bee Notes for June.

BY L. C. ROOT, MOHAWK, N. Y.

Just what the operations for the present month should be, will depend upon the honey-producing plants of the different localities. In most sections in this latitude, this will be the best time to expect swarms, and the best colonies, if left undisturbed, will probably swarm before the last of the month. In my own apiary, I endeavor to have my swarms nearly equal in strength. This may easily be done, by taking combs of brood from the best ones, and changing for combs from lighter colonies. The necessity of having hives and frames uniform in size is here very apparent. The combs not containing brood, which are taken from the weak colonies, should always be placed in the center of the heavy ones.

During the season of 1874, I continued this process of equalizing and building up swarms, until the 20th of July, before which time no surplus honey was taken. At this date, Basswood commenced blossoming, and I took an average of 100 lbs. from a hive during the remainder of the yield. Other years, a large part of the surplus honey would be taken, before the date in which the yield began in '74. I mention this to show the necessity of each beekeeper understanding his own locality, and the forage he may expect from time to time. I also desire to show the absurdity of the very common practice of some writers of fixing the date when swarms shall be made, boxes put on, etc. My advice would be, make the swarms when colonies are strong enough to spare them, and put on boxes when bees will commence work in them. One season it may be in June, another in July.

Questions and Answers.

"IS THERE NO WAY TO PREVENT SWARMING?"—Where the honey is taken from the hive with the extractor, I seldom have them attempt to swarm. If run to box-honey it is more difficult to prevent it. Removing the old queen, and furnishing them with a new one, will have the desired tendency. Natural swarms may be prevented if artificial ones are made in time. Full directions for this operation, may be found in Quinby's "Beekeeping," page 188. [Price $1.50, post paid, by the Orange Judd Company.]

THE BEE-MOTH.—"Is there any preventive for the moth or miller?"—"If bees were placed 20 or 30 ft. above the ground, would the miller affect them as much as if they were nearer the ground?"....The best preventive is to keep swarms strong in bees. It is a generally acknowledged fact that the Italians defend themselves from the moth much better than the natives. I have never known a good strong swarm to be much disturbed by the moth. Swarms usually become reduced from some other cause, when the moth takes advantage of their weakness, and is charged by the inexperienced with being the primary cause of their destruction. The fact that to secure strong swarms, a position near the ground is preferable, is proof that it would be a hindrance rather than an advantage to raise them, to avoid the ravages of the moth.

A ROOM FOR BEES.—"I have fixed a room for bees 3 ft. high, 4 ft. wide, and 5 ft. long, on the east side of a wood shed, and just under the roof. I have left a hole 15 in. square through which to take the honey out. I desire to put the first swarm in it and prevent swarming."....There is an impression that a place arranged as above is very desirable for bees. There is no reason why bees can be better prevented from swarming, in such a place, than in a properly arranged hive. If a place of this kind is to be used, a door should be made at one side, large enough for a person to pass in, and closed-end frames, or a hive should be so arranged that the space the bees occupy may be enlarged or contracted at pleasure. My opinion is, that one reason why bees do not swarm when placed in one corner of a room as above described, with no means of confining the warmth to the brood-chamber, is the fact that they are placed under so many disadvantages, that they cannot get strong enough in numbers to swarm.

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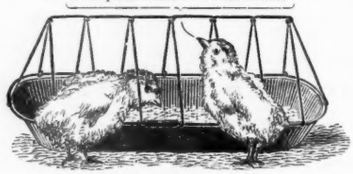
We take our food and drink from Fowler's Economy Dish, it keeps so clean and wholesome.



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Light and Dark Brahmas, Partridge and White Cochins, Brown and White Leghorns, Houdans, and G. S. Bantams. For sale at all seasons, at reasonable prices. Eggs, securely packed in new baskets, $3.00 per 13, or $5.00 for 26. Please state what you want. Send for Circular.

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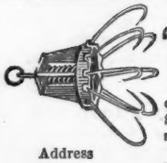

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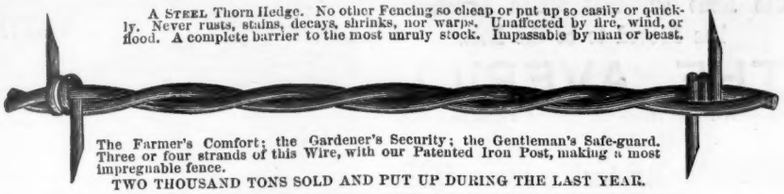

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Work Done four Times as Quick and Easy as by the Old Way.

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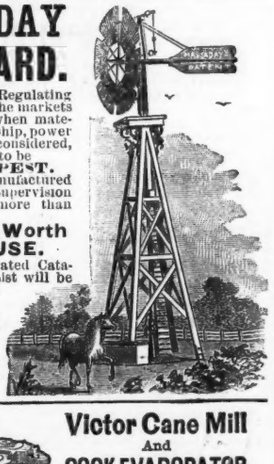

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Flours 3 to 6 bushels per hour.
Has double ventilating bolter.
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Built of burr stone and iron.
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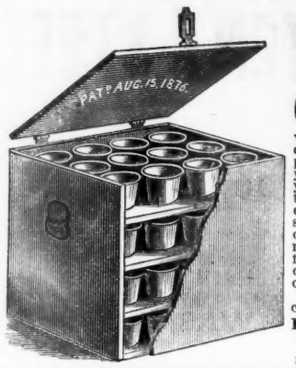

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Uniformly, without regard to season or climate. A pamphlet, descriptive of this newly-discovered system, sent free to any one sending address, with 3ct. stamp, to the

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Centennial Medal Awarded.

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The Rectangular Churn
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Simple, efficient, and **always reliable.** No inside fixtures. 5 sizes made. Endorsed by leading Dairymen. Agents wanted where we have none. Send for circulars.

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Warranted to be exactly as represented. Sold by all dealers in *really* first class Farm Machinery.

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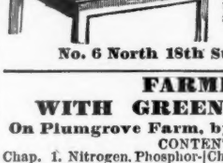

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On Plumgrove Farm, by C. HARLAN, M.D.

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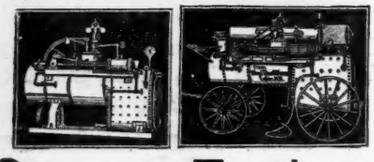

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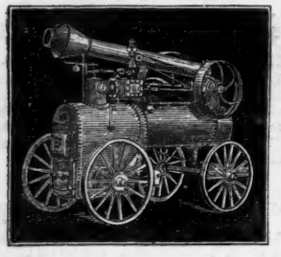

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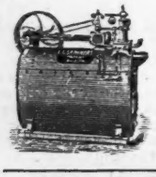

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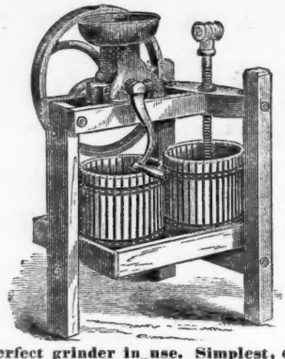

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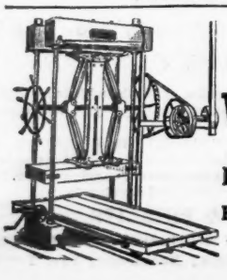

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